



NATO
+
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**NATO
Multi-Domain
Operations
Conference**

Copenhagen, Denmark
09-11 October 2023

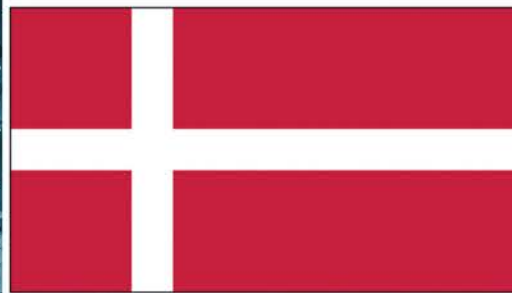






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NATO MULTI-DOMAIN OPERATION CONFERENCE 2023

10-11 October, Copenhagen, Denmark



“From now on, operation planning and defense planning are going to be concurrent and interrelated.”

- General Philippe Lavigne,
Supreme Allied Commander Transformation



- General Flemming Lentfer
Danish Chief of Defence

EXECUTIVE SUMMARY



The 2023 NATO Multi-Domain Operations (MDO) Conference in Copenhagen, Denmark, provided a valuable opportunity to assess progress and align perspectives with the incremental implementation of the Alliance Concept for MDO. With attendance from Allies, Partners, Academics, and Industry delegates, the discussions underscored the pivotal role of MDO for the Alliance. As the conference host, General Flemming Lentfer, the Danish Chief of Defence, contextualized the event by stating that “NATO’s MDO development can serve as a guiding beacon for all Alliance members as they shape their armed forces for the future operating environment.” Participants collectively acknowledged that NATO was in the early stages of comprehending, developing and implementing MDO across the Alliance, recognizing the inherent complexity and challenges involved with this endeavour.

The successful progress and implementation of MDO requires the active participation of all members. A clear demand signal underscored the need for a deeper understanding of technology and the potential opportunities to be explored across all domains. However, recognizing Cyber and Space as additional distinct domains, a clarification process was essential to discern the implications within each specific domain. Consequently, NATO must modernize its understanding of mission command by seamlessly integrating command and control (C2) across all domains. Furthermore, there is a recognized imperative for comprehensive knowledge development at all levels to foster a thorough understanding and proficient deployment of MDO.

Key themes throughout the Conference revolved around the intricacies of national perspectives on MDO, disparities in the resources needed to implement MDO, perceptions regarding the significance of technology, collaboration, and synchronization with Non-Military Actors, balancing the retention of legacy systems with the enhancement of modern operational capabilities, and the imperative to shift mind-set and cultivate a culture conducive to MDO principles.

While processes and organizational structures have underpinned the evolution of MDO, the MDO Conference emphasized the imperative for NATO to accelerate progress in various delivery lines to truly operationalize MDO. A key focal point in the discussions highlighted that the success of MDO implementation hinged on the operationalization of the Cyberspace and Space domains. This crucial insight further underscored the necessity for NATO to enhance cross-domain command, national implementation, technology integration, and the significance of human capital. The numerous constructive MDO discussions also pinpointed the paramount need for a shared narrative and a shift in mind-set and culture.

Overall, NATO is actively engaged in various MDO-related activities across the command structures. Despite the necessity for a more focused approach, it is crucial that the progression of MDO remains simple but not simplistic. It should advocate the philosophy that not all nations need to contribute to everything but should recognize the collective strengths of the Alliance and collaborate as a unified team.



At the Icebreaker, NATO Parliamentary Assembly member, Nicu Fălcoi accompanied SACT General Lavigne and the Danish Chief of Defence General Lentfer as a key note speaker

OPENING SESSION

Tuesday, 10 October 2023



General Philippe Lavigne, Supreme Allied Commander Transformation, expressed gratitude to General Lentfer for hosting the second iteration of the MDO Conference as he opened the event. Providing a thought-provoking motif of “more, faster, everywhere,” he underscored key considerations for the conference:

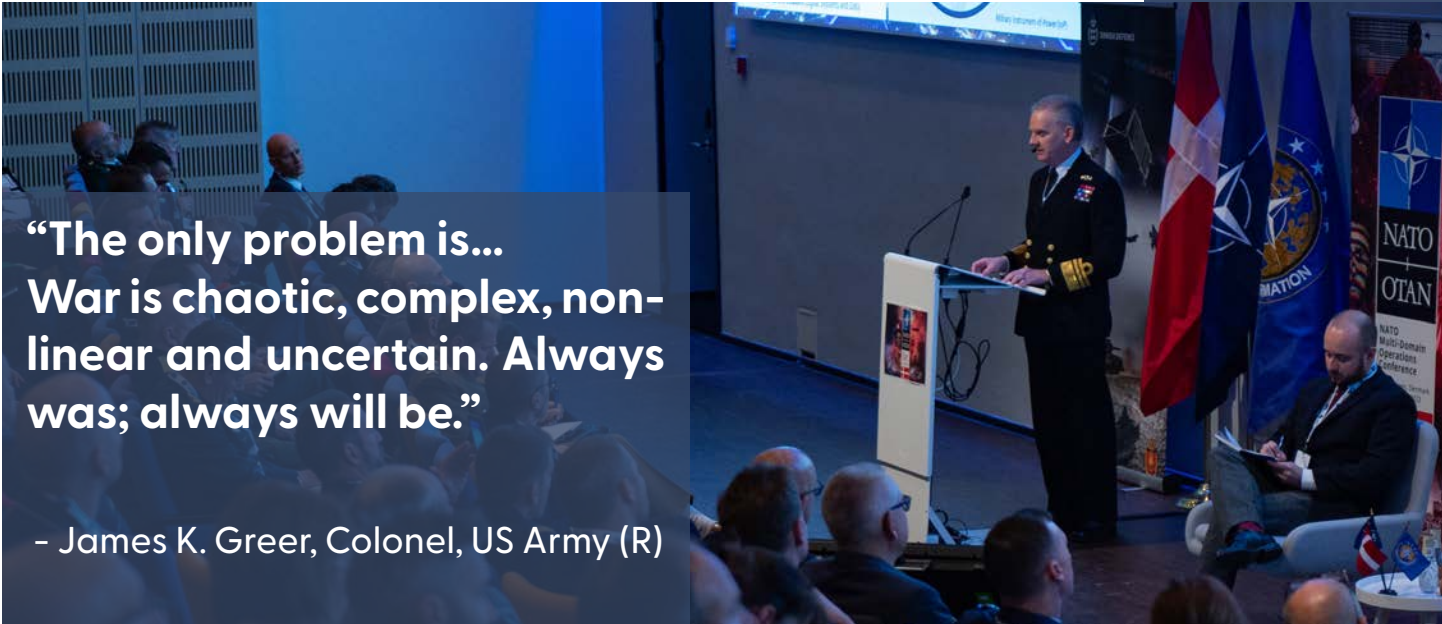
- The Alliance’s imperative to engage in MDO stems from the dynamic security landscape outlined in NATO’s new Strategic Concept.
- Allied Command Transformation (ACT) is at the forefront of the short to long-term development of MDO through its Warfare Development Agenda and initial MDO Implementation Roadmap. Concurrently, Allied Command Operations (ACO) is aligning its concept, the Deterrence and Defence of the Euro-Atlantic Area, with the multi-domain approach to transform into a MDO warfighting headquarters.
- The necessity for all nations to participate and chart a collective course towards an MDO-enabled Alliance while integrating diverse national perspectives.
- In an era dominated by data and the imperative for interoperability among nations, digital transformation must intentionally connect and bring coherence to capabilities across all domains. This connectivity remains crucial for fostering an MDO and data-centric Alliance.

- MDO should be viewed not merely as a conventional military concept but as an integral component of a broader strategy encompassing diplomatic, informational, military, and economic instruments of power (IoP).

In response, General Lentfer contemplated NATO’s MDO development, recognizing it as a crucial guiding force for all Alliance members as they sculpt their armed forces for the challenges of the future operational landscape. From the perspective of Denmark, he highlighted two further considerations:

- The evolving concepts, doctrines, and requirements associated with the operationalization of NATO’s MDO will wield a substantial impact on how the Alliance equips, trains, operates, organizes, and deploys its future armed forces.
- Regarding the need for active participation, Denmark and other smaller states within the Alliance must have a voice in shaping the MDO development in the coming years. The conference aimed not only to benefit Denmark but also to align all member states in comprehending NATO’s vision of MDO and building future interoperable warfighting capabilities.

Session 1: The Status of MDO in NATO



**“The only problem is...
War is chaotic, complex, non-
linear and uncertain. Always
was; always will be.”**

- James K. Greer, Colonel, US Army (R)

Read Ahead

On 19 May, 2023, Nations approved the Alliance Concept for Multi-Domain Operations (MDO). This formally signalled NATO's transformation from a joint approach, focused on the military services, to the multi-domain approach. MDO entails orchestrating military activities across all five operating Domains and synchronizing non-military activities through collaboration with non-military entities. Enabled by an improved digital backbone through NATO's Digital Transformation Implementation Strategy (DTIS), MDO will shape the future of deterrence and defence in the North Atlantic area of operations.

Implementation of the Alliance Concept for MDO and NATO's transformation into a multi-domain enabled alliance is a true Bi-SC endeavour, led cooperatively by Allied Command for Transformation (ACT) and Allied Command for Operations (ACO), in close coordination with the International and International Military Staffs and industry partners who are working together to achieve the MDO vision.

ACO efforts are centred on the SHAPE initiative to stand up Strategic Warfighting Headquarters (SWHQ) in Mons. Under the SWHQ construct, SHAPE has transformed its operational structure, developed an MDO battle rhythm, and set up the new MDO Joint Operations Centre (MDO JOC) under the SHAPE J3. The MDO JOC is designed to give SACEUR multi-domain situational awareness and C2 capability, informed by the collective situational awareness of all NATO Land, Air, Sea, Space, and Cyberspace assets.

Efforts at ACT focus on building a comprehensive MDO Implementation Campaign Synchronization Matrix to align existing programmes of work that contribute to NATO's multi-domain transformation. Supporting ACT programs include the OPEX-EDT Task Force, Data Exploitation Program, CWIX, the Digital Transformation Implementation Strategy and MDO-supporting Lines of Delivery under the Warfare Development Agenda. These efforts converge through Bi-SC collaboration, exercises and wargames such as DYNAMIC MESSENGER and STEADFAST JUPITER.

The scene setter for this discussion will be provided by Dr Oliver Schmitt, who will engage the senior NATO officials in discussing:

- What are NATO's priorities for MDO implementation?
- How can NATO expand the incorporation of MDO exercises and wargames to accelerate NATO's MDO transformation? How can this be used to inform doctrine development?
- What is the status of Space and Cyber in becoming fully mature Domains, and how can their growth be accelerated?
- What is the proper framework for synchronizing the Military Instruments of Power with the other Instruments of Power, partners, industry and academia, and who should own oversight of this framework?



Moderator:

- Dr Olivier Schmitt, Professor at Centre for War Studies, University of Southern Denmark

Panellists:

- Vice Admiral Guy Robinson, Chief of Staff, HQ SACT
- Major General François-Marie Gougeon, Director, Policy and Capabilities Division, International Military Staff, NATO HQ
- Lieutenant General Iulian Berdila, Special Advisor to the Command Group, SHAPE
- Ms Sarah Tarry, Director, Policy and Capabilities Directorate, Defence Plans and Policy Directorate, International Staff, NATO HQ

Content

NATO has been actively advancing its approach to MDO, recognizing the need to adapt to evolving security challenges in an interconnected and rapidly changing global landscape. MDO involves the integration of capabilities across land, air, sea, space, and cyberspace domains to enhance the Alliance's effectiveness in addressing complex and multifaceted threats. The Alliance Concept for MDO reflects a shift towards a more holistic and interconnected approach to warfare, acknowledging that modern conflicts extend beyond traditional military domains.

NATO has been working on refining its strategies, doctrines, and capabilities to implement MDO effectively. This involves enhancing interoperability among member nations, investing in cutting-edge technologies, and fostering collaboration in areas such as cyber defence, space operations, and information warfare. NATO's efforts in MDO also include adapting its C2 structures to facilitate seamless coordination across domains, enabling a more agile and responsive military force.

The first session of the conference extensively explored NATO's current status of the Alliance Concept for MDO and the ongoing implementation activity. Vice Admiral Guy Robinson, Chief of

Staff Headquarters Supreme Allied Command Transformation, initiated the discourse by providing insights into the present status and the impending challenges in the evolution of the Alliance into an MDO-capable force.

Key focal points during the session include:

- Emphasizing the collaborative nature of the efforts required for the seamless implementation of MDO and the consequential transformation of NATO into an MDO-enabled Alliance. This cooperative endeavour demands meticulous coordination between ACT and ACO, integrating the active participation of Nations, the International Staff (IS), the International Military Staff (IMS), and industry partners. The strategic pathway charted by ACT towards an MDO-enabled Alliance involves the methodical development of supporting concepts, doctrinal revisions, experiential learning from training and exercises, and the assimilation of cutting-edge capabilities and strategies.
- Recognizing the competition for resources and attention that MDO faces within individual Nations. A substantial challenge for NATO lies in persuading Nations that MDO aligns with collective interests.



- Acknowledging the jurisdictional complexities of Cyberspace and Space under national control while emphasizing the critical importance of information sharing across all domains. While NATO's Digital Transformation Implementation Strategy will provide the foundations, the precise framework for actionable steps and infrastructure facilitating this sharing currently remains uncertain. This necessitates NATO's proactive pursuit of opportunities to enhance situational awareness within and beyond these domains.

- Highlighting the imperative to identify and thoroughly investigate the obstacles hindering the smooth implementation of MDO.

- Appreciating the nuanced perspective that MDO is not exclusively reserved for times of crisis and conflict. The implementation process must encompass a holistic understanding of how MDO principles operate during peacetime, ensuring adaptability and readiness in diverse scenarios.

- Underscoring the paramount need for NATO to meticulously identify non-military actors intricately linked with MDO. Simultaneously, recognizing that comprehending the nature

of these relationships and their inherent necessity is pivotal for effective MDO implementation.

- Recognizing the refined articulation of MDO requirements should align with broader national security and defence strategies, demonstrating a cohesive and integrated approach. Policymakers need to see the direct correlation between MDO implementation and the enhancement of national security, strategic agility, and the ability to effectively respond to multifaceted threats. By clarifying the specific changes needed and their expected outcomes, ACT, alongside ACO, can effectively communicate its value proposition to policymakers, fostering the necessary political will and support for its successful execution.

NATO's proactive approach to MDO involves refining strategies, fostering collaboration, and adapting structures. The Alliance emphasizes the collaborative nature of MDO, recognizes challenges in resource allocation, and underscores the importance of understanding MDO in both crisis and peacetime. To ensure success, NATO must address jurisdictional complexities, identify obstacles and align MDO requirements with broader national security strategies, effectively communicating its value proposition to policymakers for support and execution.

Session 2: MDO Implementation - National Perspective

Read Ahead

Execution of NATO Multi-Domain Operations (MDO) requires the orchestration of the Military Instruments of Power (IoP) of thirty-one Nations acting in unison, synchronizing military activities with the non-military IoP, partners and stakeholders from academia and industry. The Nations have agreed upon the importance of MDO, but approaches to MDO at the national levels vary.

The Nations have agreed on the Alliance Concept for MDO as the path forward, including the importance of a data-centric approach to enhance interoperability. Implementing the MDO Concept is the next step and will require collaboration in areas like MDO doctrine, interoperability standards, leader development, training and integration of non-military stakeholders. Diversity is our strength as an Alliance; the varied perspectives of nations have potential to accelerate NATO's MDO transformation, harnessing the ideas and initiatives developed at the national level.

National capabilities will be leveraged most highly in Cyber and Space. The Cyber Domain is rapidly evolving; unbound by geography and traditional factors such as visibility, distance, size, and time. However, nations will retain operational control of offensive cyber capabilities for the near future. This makes integration of national capabilities through the continued development of 'Sovereign Cyber Effects Provided Voluntarily by Allies' tools essential to mature the Cyber Domain.

Space Domain capabilities are controlled at the highest national levels, and NATO relies on strategic collaboration to integrate Space data, products and services from across the Alliance. Like Cyber, NATO's effectiveness at harnessing Space will depend on integrating the knowledge and national perspectives of the Alliance's

Space-enabled allies to fully integrate Space capabilities into the NATO operational portfolio.

Major General Jacob Alexa, Danish Deputy Permanent Secretary of State for Defence, will engage most senior national military representatives from the US, UK, Poland, Germany and Croatia in discussing:

- What are NATO's priorities for MDO implementation from a national perspective?
- What is the main difference in implementing MDO between big and smaller states? What are the main opportunities, and what are the challenges?
- How can doctrine developed at the national level be used to inform and accelerate the development of NATO MDO doctrine integration?
- How can NATO best bridge the gap between currently fielded technology and the Warfare Development Agenda to accelerate MDO transformation but continue to harness long-term initiatives that ensure future warfighting capability?
- What are the primary obstacles that inhibit full integration of the information and effects provided by the Cyber and Space Domains, and what solutions exist to overcome them?



Moderator:

- Major General Jacob Alexa, Chief of Plans and Capabilities, Defence Command Denmark

Panellists:

- Admiral Robert Hranj, Croatian Chief of Defence
- Lieutenant General Tom Copinger-Symes CBE, Deputy Commander, UK Strategic Command
- Lieutenant General Dagvin Anderson, Director, Joint Force Development, US Joint Staff
- Major General Karol Dymanowski, Deputy Chief of the General Staff, Polish Armed Forces
- Major General Gaebelein, Director of the Bundeswehr Office for Defence Planning

Content

To effectively implement MDO, a concerted effort is imperative to coordinate the Military IoP amongst the Alliance. This collaboration extends beyond military entities, involving synchronization with non-military IoP, partners and stakeholders from academia and industry. While all nations recognize the importance of MDO, there is divergence in the approaches taken at the national level.

The strength of the Alliance lies in its diversity, with the varied perspectives of nations having the potential to accelerate NATO's MDO transformation by incorporating ideas and initiatives developed at the national level. National capabilities, particularly in the realms of Cyberspace and Space, will play a pivotal role.

In the Cyberspace domain, characterized by rapid evolution and geographical independence, nations will retain operational control of offensive cyber capabilities. The integration of national capabilities through the development of 'Sovereign Cyber Effects Provided Voluntarily by Allies' is deemed essential to maturing the Cyberspace domain. Similarly, in the Space domain, military capabilities are under the purview of the highest national levels, necessitating strategic collaboration to seamlessly integrate Space data, products and services across the Alliance. This collaboration extends to industry, emphasizing the need to work closely to optimize the orchestration of desired converging effects. The integration of military and industry efforts becomes paramount in achieving comprehensive and effective results in MDO.

Having established an agreed Alliance concept for MDO, the successful implementation necessitates the coordinated orchestration of activities involving both military and non-military participants. This requires a clear understanding of the realistic contributions that NATO nations can make.





The discussion centred on national perspectives and ways in which NATO can facilitate the realization of an MDO-enabled Alliance. Further points of interest emerging from this session included:

- Adopting an MDO approach involves “thinking big, starting small and scaling as required.”
- NATO’s communication efforts must extend across all levels (Strategic, Operational, and Tactical) to ensure a collective understanding of what an MDO-enabled Alliance entails.
- Recognizing opportunities for smaller nations to contribute to Military Operations through niche capabilities and regional expertise.
- Given resource constraints, prioritization becomes essential and anchoring MDO in capability development is a practical and viable approach.
- Understanding that in certain scenarios, quantity can also be a form of quality, often referred to as “affordable mass.”
- Recognizing that while the nature of threats may not have changed, NATO must align reality with vision. This involves modernization by instilling cultural habits,

keeping processes simple and focusing on aspects within NATO’s control.

- Acknowledging that the effectiveness of MDO rests on the symbiotic relationship between skills and equipment, emphasizing the critical interdependence for achieving meaningful progress.
- Underlining flexibility as a core principle. The implementation of MDO should avoid being overly prescriptive to prevent complications in capability development.
- Underscoring the vital role of digitalization in realizing MDO. Implementing digitalization accurately will serve to connect the conceptual framework with the capabilities of the warfighter.

The successful realization of MDO within the Alliance requires collaborative efforts across military and non-military environments. Embracing the diversity of national perspectives and capabilities, particularly in Cyberspace and Space, is crucial. Prioritizing resource allocation, maintaining flexibility and ensuring effective communication at all levels will propel NATO towards a robust MDO-enabled future, effectively addressing evolving threats.

Session 3: Exploiting the Technological Advantage

Read Ahead

NATO Multi-Domain Operations (MDO) can be optimized using the effective exploitation of technology as an enabler to provide an operational advantage. This includes the use of Emerging Disruptive Technologies (EDTs), particularly, Artificial Intelligence (AI) and the transition to a data centric organization via the NATO Digital Transformation Implementation Strategy (DTIS). These will unlock opportunities to advance interconnectivity and interoperability across national forces and the other Instruments of Power.

EDTs bring opportunities for secure communications, situational awareness and decision-making and can support commanders in visualizing, testing, generating and executing activities across all domains. Nations are exploiting EDTs at different rates, which creates a challenge for MDO interoperability. Further, AI can potentially increase the speed and accuracy of data analysis, accelerating the commander's ability to react. As technology accelerates, AI provides opportunity to assist decision-making through the integration of autonomous functions. Whilst NATO must take advantage of technological advancement, responsible use of AI must be paramount before AI-assisted decision making is integrated with NATO military forces.

The war in Ukraine has demonstrated how unmanned systems have given Ukrainian forces an asymmetric advantage in what was initially expected to be a conventional conflict dominated by a larger adversary. Unmanned Aerial Systems have traditionally been used as an Intelligence Surveillance and Reconnaissance tool to gather information on an adversary but have also been harnessed for applications such as communications and jamming. Open-source media has broadcast videos of Russian

soldiers driven from their trenches at the threat of a mortar round being delivered on their position by an unmanned system, which is a significant disruptor in modern warfare.

This syndicate will explore a full spectrum of technological areas to operationalize MDO and how MDO can support further advancements in each of those technological areas. This includes the importance of digitalization and collaboration across the defence industry.

Dr Andrea Gilli, Senior Researcher at the NATO Defence College, provides the scene setter for this discussion. With him in this panel, he has several senior industry leaders. The session will focus on next-generation platforms, connectivity and data gathering. With this in mind, the session aims to discuss the following:

- What technology advancements most contribute to MDO within NATO, and how can they be further leveraged to expand situational awareness and interoperability?
- What technology gaps inhibit the implementation of the NATO MDO vision?
- What are the challenges for NATO's Digital Transformation? What technology initiatives best contribute to accelerating Digital Transformation?
- Should Digital Transformation within NATO be evolutionary, or should NATO start over with a "blank slate"?
- What should be the role of Artificial Intelligence within the Alliance?

Moderator:

- Dr Andrea Gilli, Senior Researcher, NATO Defence College

Panellists:

- Brigadier General Sean Conroy, US Air Force Reserves/Microsoft
- Mr Joe Villani, Vice President for Demonstrations and Prototypes, Lockheed Martin
- Mr Ricardo Mendes, Chief Executive Officer, Tekever
- Mr Rune Raunow, Vice President of Business Development, Systematic



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The strategic exploitation of technology will be a critical catalyst for enabling MDO and is necessary for securing operational advantages. Delving into a myriad of technological spheres aimed at operationalizing MDO, the discussions spotlighted the pivotal role of digitalization in this context. An illustrative case study presented the idea of an “App-ecosystem” tailored explicitly for military applications. This example underscored the emphasis on creating an entire ecosystem rather than merely a capability. Noteworthy components included prioritizing user-friendly interfaces, ensuring secure data exchange and eliminating the need for frontline personnel to grapple with the intricacies of underlying technological complexities.

A foundational principle on the use of technology reverberated throughout the discussions. It highlighted that any technological approach introducing complexity to operational processes warranted a critical re-evaluation. This underscored the need for a streamlined and user-centric approach to technological integration, where transparency and simplicity are prioritized. Beyond the immediate technological considerations, the imperative of clear and transparent communication emerged as a cornerstone. The reasons for instigating technological change (intent) and its resultant impact on the operational environment (effect) were identified as critical aspects that demand effective communication for successful integration. This recognition resonated as a key factor in navigating the

complexities of evolving technological landscapes.

Amidst these discussions, the theme of agility emerged as a strategic imperative. There was a collective call for NATO to proactively seek and capitalize on opportunities to expedite the feedback loop in response to technological advancements. Simultaneously, the pivotal question of whether the organization was sufficiently structured and prepared for the impending technological transformation became increasingly prominent. The consensus was a resounding call for NATO to not only embrace change but also to comprehensively understand the nuanced dynamics of this imminent paradigm shift.

Artificial Intelligence-supported planning was positioned as a potential vanguard in the realm of MDO, presenting a paradigmatic shift in military strategy. This introduction of a new dimension to the discussions showcased the potential synergy between advanced technology and military strategic foresight, emphasizing the need for a forward-thinking and adaptable approach to planning and execution.

Throughout the deliberations, the experts consistently steered the focus back to the end user, underscoring the imperative of bringing challenges and their solutions closer to those on the front lines. The prevailing sentiment was crystal clear that the future of MDO hinges on purposeful, precise, and adaptable harnessing of technological power.

Additional noteworthy insights from the session included:

- Seamless collaboration, through interoperability and integration, among diverse technological systems is crucial for effective MDO, ensuring synchronized efforts across all domains.
- The integration of advanced analytics and artificial intelligence enables rapid data analysis and predictive modelling, enhancing decision-making capabilities for proactive responses.
- Synergizing human intelligence with artificial intelligence (Human-Machine Teaming) promotes collaborative efforts,



with training programs ensuring personnel are adept at utilizing technological tools effectively.

- Collaboration between the military and private sector accelerates the development and deployment of cutting-edge technologies, leveraging commercial solutions for enhanced capabilities.
- Immersive training simulations and virtual reality create realistic scenarios, enhancing adaptability and preparedness of military personnel in diverse and complex situations.

The imperative of clear communication, adaptability, and purposeful harnessing of technological power emerged as key factors that will define the success of MDO, with a collective call for NATO to embrace change and proactively navigate the imminent paradigm shift. The future success of MDO hinges on transparent collaboration, innovative use of

advanced technologies, and a commitment to preparing personnel for the dynamic challenges of modern warfare.

- Underscoring the vital role of digitalization in realizing MDO. Implementing digitalization accurately will serve to connect the conceptual framework with the capabilities of the warfighter.

The successful realization of MDO within the Alliance requires collaborative efforts across military and non-military environments. Embracing the diversity of national perspectives and capabilities, particularly in Cyberspace and Space, is crucial. Prioritizing resource allocation, maintaining flexibility and ensuring effective communication at all levels will propel NATO towards a robust MDO-enabled future, effectively addressing evolving threats.

Session 4: MDO & Synchronization with Non-Military Instruments of Power



Read Ahead

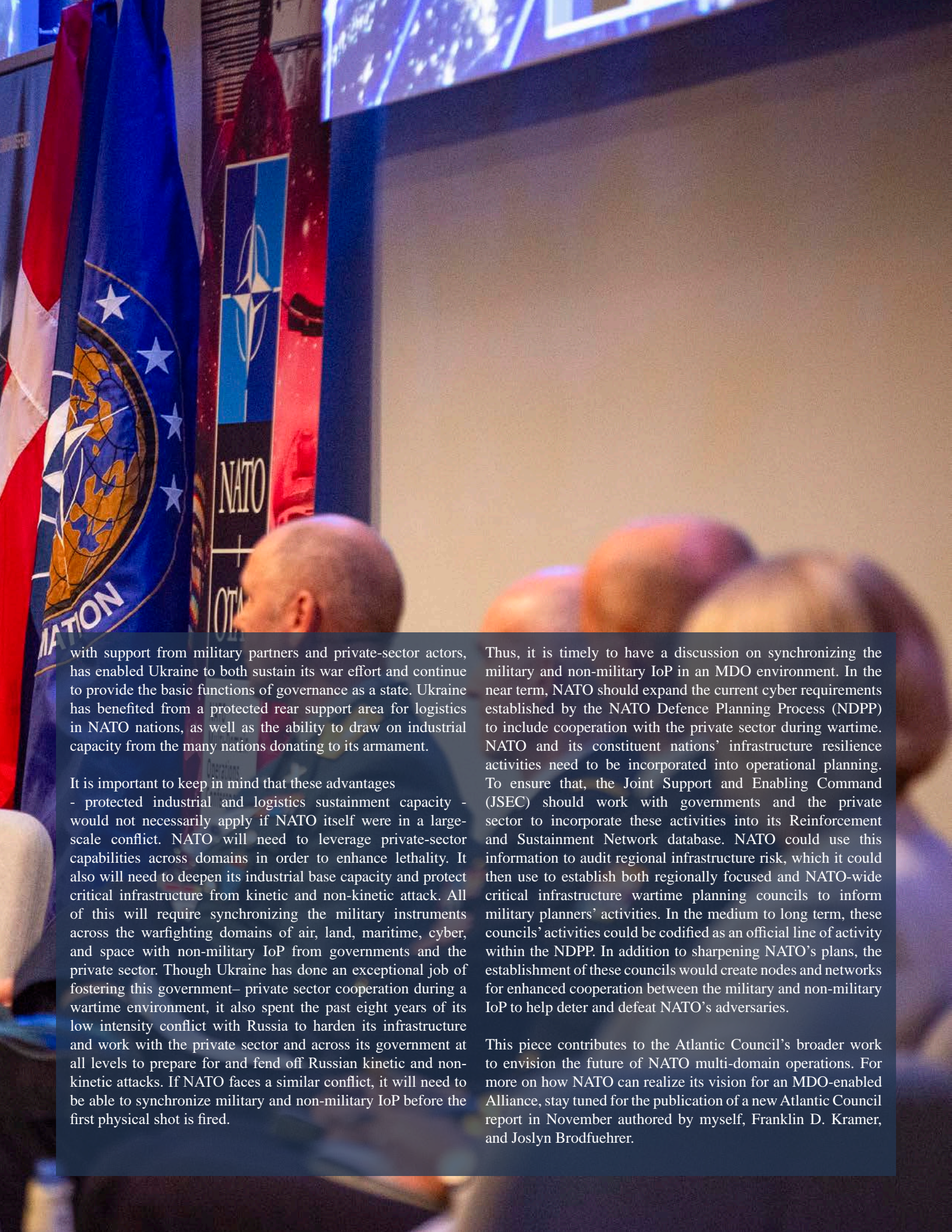
The same trends that are driving NATO to develop its Multi-Domain Operations (MDO) Concept are also increasing military operations' reliance on and interaction with non-military instruments of power (IoP). These trends include the proliferation of sensors, the rapid expansion of civilian space-based assets, the increasing importance of cyber to enable military operations, and the vulnerability of civilian infrastructure to kinetic and non-kinetic attack during wartime.

Each trend necessitates more focused coordination of military and non-military IoP. To succeed, military operations must be multi-domain and be built on a strong backbone of synchronization with non-military IoP. NATO's Allied Command Transformation (ACT) has recognized this interdependence in its definition of MDO as the "orchestration of military activities, across all domains and environments, synchronized with non-military activities, to enable the Alliance to create converging effects at the speed of relevance." Achieving this will require immediate steps to further coordinate with non-military divisions of government and private-sector actors. It will also require a more concerted approach to incorporate these elements into NATO planning processes in the long term. Ukraine's remarkable defence against Russia's brutal war of aggression demonstrates how military IoP connect with and depend on non-military IoP. Ukraine's use of Starlink for command and control is well-documented, for instance, even as recent comments from

SpaceX CEO Elon Musk demonstrate potential drawbacks to reliance on the private sector for low-earth orbit (LEO) enabled C2 infrastructure.

Governments should continue their investments in more advanced satellite capabilities while also leveraging commercially available LEO capabilities with an emphasis on contracting structures that mitigate potential risks of relying on non-military satellites for military operations. In addition to communications, Ukraine has utilized commercial space capabilities to complement government-provided satellite imagery intelligence to great effect. Ukraine has further leveraged the proliferation of private sensing available by incorporating publicly available information into its intelligence and targeting. In addition to turning to private-sector capabilities to improve combat effectiveness, Ukraine has also had to address challenges posed by its reliance on private industry, critical infrastructure, and the private-sector companies that operate and maintain said infrastructure.

After decades of low-intensity conflict, Russia's invasion of Ukraine has reintroduced largescale, high-intensity combat to Europe. The stress this war has put on global industrial capacity and the air, land, and maritime lines of communication feeding into Ukraine have reminded military and non-military planners alike of the adage that logistics win wars. Hence, when Russia's initial invasion failed, it quickly ramped up a barrage of attacks on Ukraine's transport, energy, and cyber infrastructure using both kinetic and non-kinetic means. Ukrainian ingenuity, coupled

A photograph of a NATO event. In the foreground, the back of a person's head is visible. In the background, several flags are hanging, including the NATO flag and the flag of the United States. A large screen displays a blue and white image. The text is overlaid on the bottom half of the image.

with support from military partners and private-sector actors, has enabled Ukraine to both sustain its war effort and continue to provide the basic functions of governance as a state. Ukraine has benefited from a protected rear support area for logistics in NATO nations, as well as the ability to draw on industrial capacity from the many nations donating to its armament.

It is important to keep in mind that these advantages

- protected industrial and logistics sustainment capacity - would not necessarily apply if NATO itself were in a large-scale conflict. NATO will need to leverage private-sector capabilities across domains in order to enhance lethality. It also will need to deepen its industrial base capacity and protect critical infrastructure from kinetic and non-kinetic attack. All of this will require synchronizing the military instruments across the warfighting domains of air, land, maritime, cyber, and space with non-military IoP from governments and the private sector. Though Ukraine has done an exceptional job of fostering this government-private sector cooperation during a wartime environment, it also spent the past eight years of its low intensity conflict with Russia to harden its infrastructure and work with the private sector and across its government at all levels to prepare for and fend off Russian kinetic and non-kinetic attacks. If NATO faces a similar conflict, it will need to be able to synchronize military and non-military IoP before the first physical shot is fired.

Thus, it is timely to have a discussion on synchronizing the military and non-military IoP in an MDO environment. In the near term, NATO should expand the current cyber requirements established by the NATO Defence Planning Process (NDPP) to include cooperation with the private sector during wartime. NATO and its constituent nations' infrastructure resilience activities need to be incorporated into operational planning. To ensure that, the Joint Support and Enabling Command (JSEC) should work with governments and the private sector to incorporate these activities into its Reinforcement and Sustainment Network database. NATO could use this information to audit regional infrastructure risk, which it could then use to establish both regionally focused and NATO-wide critical infrastructure wartime planning councils to inform military planners' activities. In the medium to long term, these councils' activities could be codified as an official line of activity within the NDPP. In addition to sharpening NATO's plans, the establishment of these councils would create nodes and networks for enhanced cooperation between the military and non-military IoP to help deter and defeat NATO's adversaries.

This piece contributes to the Atlantic Council's broader work to envision the future of NATO multi-domain operations. For more on how NATO can realize its vision for an MDO-enabled Alliance, stay tuned for the publication of a new Atlantic Council report in November authored by myself, Franklin D. Kramer, and Joslyn Brodfuehrer.

Moderator:

- Ms Ann Dailey, Non-resident Senior Fellow, Atlantic Council

Panellists:

- Lieutenant General Yngve Odlo, Commander, Norwegian Joint Operations HQ
- Major General Vincent Breton, Director of the French Joint Concept and Doctrine Center
- Rear Admiral Ignacio Cuartero Lorenzo, Director of the Concepts and Capabilities Directorate, The EU Military Staff
- Dr Olivera Injac, former Minister of Defence of Montenegro

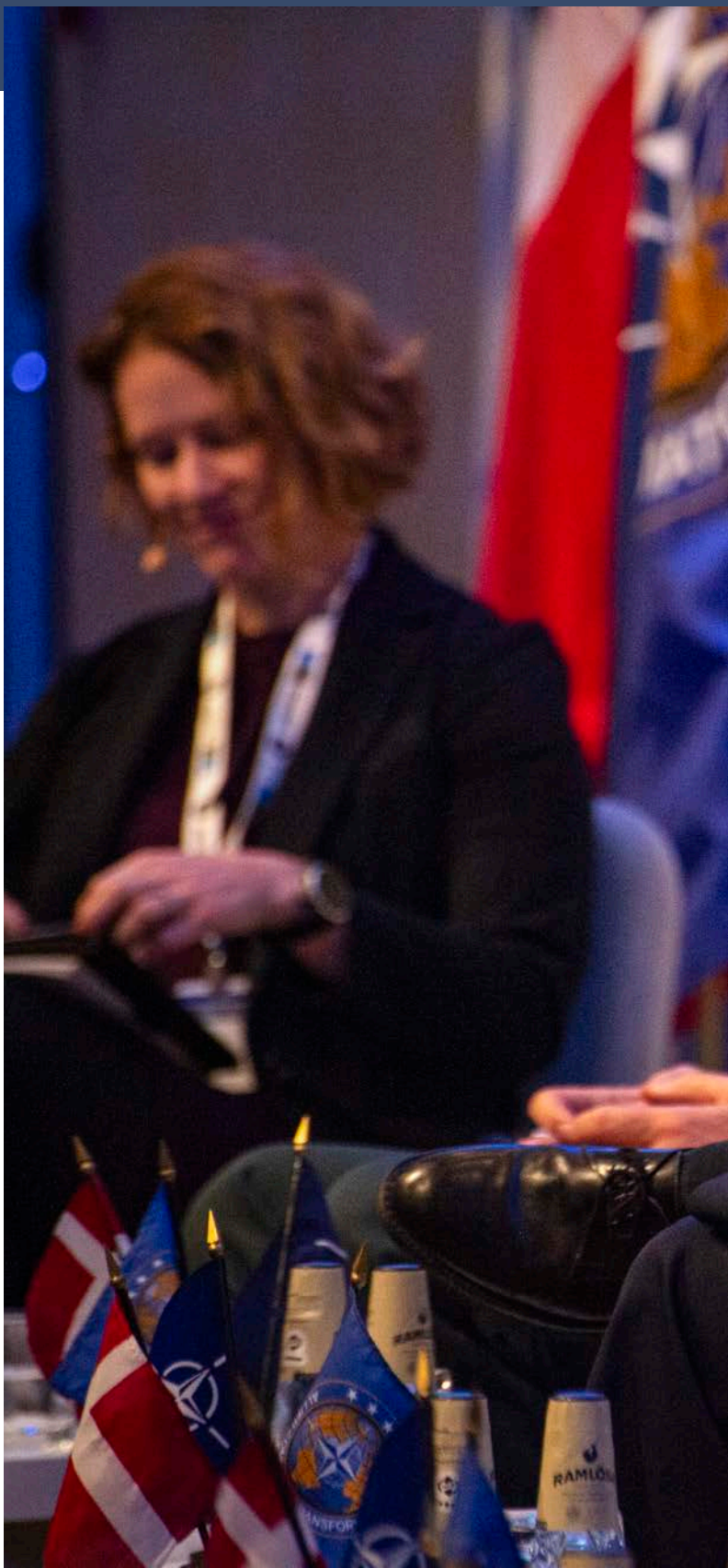
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MDO signifies a departure from traditional military strategies by acknowledging the interconnected nature of global challenges. The essence of MDO lies in its ability to orchestrate military efforts across all domains simultaneously. However, a crucial aspect is the essential relationship between MDO and the synchronization with non-military IoP.

In the contemporary security landscape, conflicts are not confined to the battlefield alone; they extend into the realms of politics, economics, and information. Therefore, achieving strategic objectives necessitates a synchronized approach that integrates military actions seamlessly with diplomatic initiatives, economic measures and informational strategies. MDO becomes not just a military strategy but a holistic framework that aligns military operations with broader national and international objectives, fostering a unified response to multifaceted challenges.

The panel discussions probed into the intricacies of harmonizing military and non-military elements, highlighting the interdependence of power instruments beyond the traditional kinetic sphere. Effective synchronization involves aligning military actions with diplomatic endeavours, economic policies, and information campaigns. The success of MDO hinges not just on military prowess but on the seamless integration of non-military instruments, reinforcing the notion that the modern battlefield is a complex, multifaceted environment where victory is achieved through a carefully orchestrated symphony of actions across all domains and IoP.

Thus, the evolution of military operations necessitates a profound shift towards a multi-domain paradigm, anchored in a resilient digital infrastructure that not only facilitates synchronization and collaboration within the military but also extends its reach to non-military entities. Delving into the discussions, a fundamental theme emerged - the vital interdependence between military and non-military components.





Additional noteworthy observations included the following key insights:

- The Norwegian Total Defence Concept emerged as an exemplar, illustrating a model that seamlessly interacts with all IoPs. This model served as a benchmark for comprehensive integration and coordination.
- MDO was emphasized not merely as a strategy but as a comprehensive way of working. The panellists highlighted NATO's nuanced understanding of MDO, which involves cultural and mind-set shifts, educational reforms, and specialized training programmes.
- The need for collaboration with non-military actors was underscored as an imperative. A strategic engagement plan took centre stage, emphasizing the importance of understanding civil-military cooperation. This collaborative approach was identified as essential for unlocking untapped opportunities within the realm of MDO.
- The European Union's (EU) strategic shift towards an integrated Concept of Operations for future endeavours was noted as a significant trend, symbolizing a broader integration trajectory. This development signals a collaborative approach beyond individual military entities.
- The urgency of operationalizing dialogue with the EU was highlighted as a pressing need. This involves the establishment of strategic and structured dialogues, necessitating the development of a hybrid toolbox to facilitate effective information sharing not only with the EU but also within NATO.
- Addressing the challenges of information sharing, the discussions acknowledged the persistent hurdles in sharing

information within the Alliance and with non-military IoP. Overcoming these challenges emerged as a critical aspect of fostering seamless collaboration.

- The emergence of Resilience Funding was recognized as a critical consideration, shining a spotlight on the financial dimension of ensuring robust resilience in the face of evolving threats and challenges.
- Inadequate coordination between military and civil efforts in a MDO scenario can lead to unintended consequences, highlighting the importance of addressing challenges in coordination, cooperation, and commitment for effective synchronization with non-military IoP.
- Differences in national cohesion, manifested through variations in authority, funding, and processes, were recognized as hindrances to cohesion, underscoring the imperative for adopting a unified approach to tackle common challenges.
- Recognizing distinctions among peace, crisis, conflict, and war, challenges in clarifying authorities and responsibilities were acknowledged, posing the potential for differing perspectives depending on the situation. Striking the right balance in different scenarios emerged as a critical consideration.

The discourse highlighted the imperative for a holistic transformation in military operations, emphasizing collaboration, integration, and adaptability as cornerstones for success. The multifaceted challenges identified underscore the need for a comprehensive and unified approach to navigate the complexities of the evolving security landscape.



Session 5: MDO & Professional Military Education and Training: harnessing the power of training, experimenting, modelling, simulation and wargaming



Read Ahead

The development of multi-domain war fighters and cross-domain leaders through the linkage of professional military education, training and operational requirements must be a priority for NATO. NATO's MDO Concept emphasizes the need for war fighters and leaders that are not only domain specialists but also are capable of exploiting strategic, operational and tactical opportunities across all five domains while operating across multiple instruments of power. To achieve this is a complex task.

Alliance members will need to develop their professional military education (PME) and training programmes in a manner that meets the requirements of MDO. This will require the introduction and emphasis on new subjects

and educational approaches that will develop creative and critical thinking, leverage the strategic, operational and tactical advantages that multidomain operations will provide and will take into consideration adversary multi-domain capabilities. Across NATO there will need to be an unprecedented alignment of PME and training end states. Greater interoperability at the operational level is best supported by greater interoperability at the nexus between education and training.

However, the Alliance should support the simultaneous retention of national needs and priorities in each member states' professional military education and training programmes. Whilst NATO has a role to play, the main effort remains in the Nations.



Technology will play a vital role by taking NATO PME and training to a new level of authenticity that will lead to enhanced levels of readiness. Initiatives such as the Next Generation of Modelling & Simulation (M&S) tools will enable NATO and Allies to leverage the power of experimenting, modelling, simulation and wargaming. Allies will also need to develop programmes, which emphasize the persistent use of such tools in order to maintain a high level of readiness and can fight and win in all future operating environments. Wargaming and experimentation, both powerful analytic methods, can lend incredible insight into the complexities of MDO across NATO not only in the analytic and planning communities, but also in the training and education communities. Experimentation and wargaming are uniquely suited to the exploration of new ideas, concepts, and capabilities and will play a critical role in implementing MDO for NATO. When combined with EDT tools like Next-Generation M&S, the ability to generate understanding in NATO's training and education enterprises will be almost limitless.

Dr Ian Bowers, an associate professor at the Institute for Military Operations, Royal Danish Defence College, will moderate this panel and guide a conversation to address:

- What role should NATO play in the extension of professional military leadership training beyond that provided by the Nations?
- What should be the focus of NATO's efforts in development of the military leadership in its support to MDO and the drive towards interoperability?
- How can we improve integration of MDO experimentation in NATO and Allied exercise programmes?
- Should Alliance members take the lead in developing methodologies for education and training MDO? How should such methodologies be best disseminated across the Alliance?
- Should MDO wargaming be pre-eminent in NATO's training and education programmes dealing with MDO?

Moderator:

- Dr Ian Bowers, Associate Professor, Royal Danish Defence College

Panellists:

- Rear Admiral Placido Torresi, Deputy Chief of Staff for Joint Force Development, HQ SACT
- Major General Flemming Mathiasen, Commander of the Royal Danish Defence College
- Dr Jeffrey M. Reilly, Chair of the Department of Joint Education, Air Command and Staff College
- Dr Sarah Chapman-Trim, Head of People and Culture, UKStratCom Transformation Programme

Content

In the ambitious pursuit of an MDO-enabled Alliance, the strategic imperative unfolds with increasing complexity, necessitating an exhaustive and meticulous focus on cultivating highly versatile warfighters and leaders capable of adeptly navigating the intricate web of multiple domains. This imperative underscores the symbiotic relationship between professional military education (PME), dynamic training methodologies and the ever-evolving operational landscape; understanding this nexus is not only foundational but also pivotal to realizing NATO's forward-looking vision.

However, within the expansive scope of this transformative initiative, various challenges come to the forefront. The acknowledgment of resource scarcity not only reinforces the strategic imperative for optimal resource allocation but also brings to light the daunting challenge of striking a delicate balance amidst competing priorities.

Furthermore, addressing the multifaceted challenge of MDO involves recognizing the need to enhance critical thinking and problem-solving skills. However, developing

these cognitive abilities poses a unique set of challenges including the need for innovative teaching methodologies, updated curriculum frameworks and a commitment to fostering a culture of continuous learning within military organizations and across the Alliance. The USA Joint All Domain Operations Concept was presented as an educational foundation example.

The contemporary landscape of warfare, marked by its relentless evolution, poses yet another formidable challenge. A revised approach must contend not only with increased complexity but also adapt to the heightened operational speed



and address the enhanced precision requirements demanded by modern conflicts. Technological advancements, geopolitical shifts, and the asymmetric nature of emerging threats compound the complexity, demanding a simple proactive and adaptive approach to keep pace with the rapidly changing dynamics.

Further underscoring the comprehensive nature of this endeavour, the discussions highlighted the critical role played by human factors in shaping the success or failure of transformative processes. The emphasis on individuals as pivotal enablers for MDO introduces the challenge of identifying, recruiting, and retaining personnel with the right skills, talents, and mind-set; a challenge compounded by the competitive landscape for skilled professionals within and beyond the military sphere.

Additional aspects explored during the session included:

- Creating a cohesive training framework that seamlessly integrates programmes across all domains, cultivating a comprehensive understanding of MDO. This involves cross-disciplinary training modules that simulate real-world scenarios, preparing military personnel to operate cohesively in complex, multi-dimensional environments.
- Harnessing advanced simulations for experiential learning, replicating a range of operational scenarios to empower warfighters and leaders in making decisions, confronting consequences, and gaining insights from outcomes within a controlled environment. This approach enhances adaptability and decision-making skills crucial for multi-domain proficiency.
- Creating dynamic and flexible models that precisely capture the evolving dynamics of MDO, ensuring accuracy in representing the ever-changing nature of scenarios. This involves continuously updating models to incorporate emerging technologies, geopolitical shifts, and unconventional threats. Dynamic modelling ensures that training remains relevant and responsive to the rapidly changing

global security landscape.

- Extending training scenarios to incorporate interagency collaboration, involving not only military branches but also civilian agencies and international partners. This fosters a comprehensive understanding of the interdependencies between military and non-military entities, preparing leaders to navigate complex, joint operations effectively, and in the future MDO ones as well.

- Design leadership programmes that specifically focus on cross-domain leadership skills. This includes emphasizing collaboration, communication, and decision-making in environments where multiple domains intersect. Developing leaders with a keen understanding of the complexities inherent in MDO is essential for mission success.

- Embracing cutting-edge technologies such as virtual reality and augmented reality to create immersive training experiences. These tools offer realistic simulations, enabling personnel to interact with virtual environments and equipment, facilitating hands-on learning that enhances technical proficiency and situational awareness.

The transformative journey toward an MDO-enabled Alliance requires a holistic and adaptive approach that addresses challenges ranging from resource constraints to the evolving nature of warfare. As NATO strives to realize its forward-looking vision, the intricate relationship between PME, dynamic training methodologies, and the pressing need for domain-specific readiness stands as the linchpin of success. By embracing innovative teaching methodologies, prioritizing resource allocation judiciously, and recognizing the pivotal role of human factors, the Alliance can navigate the complexities of MDO, ensuring the comprehensive readiness of its warfighters and leaders in the face of an ever-evolving global security environment.

MDO and Cross Domain Command

Wednesday, 11 October 2023

Read Ahead

The Alliance's standing military structures (NATO Command Structure and NATO Force Structure) are unique amongst instruments of power. Integrated military structures provide the Alliance an advantage in any contingency, regardless of its nature. Future success of the Alliance's Military Instrument of Power (MIOp) depends not only on preparation, capability and agility of forces but also the ability of commanders to operate in a complex operating environment simultaneously across physical and non-physical domains. This requires cross-domain understanding and agile and asymmetrical thinking supported by robust and continuously refreshed information and communication systems. Against this backdrop, traditional methods of command will have to evolve, continuing to embrace the flexibility and advantage of mission command.

To support the Alliance's ambition of transforming towards an MDO-enabled Alliance with capabilities to deter and defeat adversaries across the five operational domains in an orchestrated and synchronized manner, the MIOp must evolve. NATO must review, and as necessary, adapt and advance current conceptual approaches towards a multi-domain perspective. Moreover, the traditional "Art of Command" must transform into a modernized Cross-Domain Command that embraces a more agile and flexible approach.

The future Cross-Domain Command must leverage technological opportunities and incorporate existing and emerging technologies to achieve enhanced and accelerated decision making at all levels of command as well as information

superiority enabled through improved interconnectivity, data exploitation and a data-centric Digital Backbone.

Building upon ongoing efforts to adapt and modernize C2, the Alliance is adopting an incremental and evolutionary approach. Recognizing work already initiated by both BiSC and building on the approved MDO Concept, the Cross-Domain Command Concept will focus on medium to long term conceptual development of NATO C2 into a future Cross-Domain Command.

Following the scene setter provided by LtGen David Julazadeh, ACT Deputy Chief of Staff for Capability Development and Lt Gen Iulian Berdila, Special Advisor to SHAPE Command Group, the audience will be invited to consider:

- What are the primary challenges in establishing and maintaining effective command and control processes across domains?
- What implications for command processes will existing and emerging technologies have?
- What are the most pressing organizational and cultural/mind-set changes to enable a CrossDomain Command Approach?
- How will the commander of the future work differently from today?
- What challenges do nations face when aligning their effects toward a NATO MDO approach?

Allies agreed to strengthen NATO's command and control, to ensure that it is sufficiently agile, resilient and staffed to execute our plans. This will improve our ability to conduct exercises, to manage NATO's posture in peacetime and in the transition to crisis and conflict, and to undertake command and control for the full spectrum of missions, including large-scale multi-domain operations for collective defence.

- NATO 2023 Vilnius Summit Communiqué



National Challenges of MDO Implementation

Moderators:

- Rear Admiral Placido Torresi, Deputy Chief of Staff for Joint Force Development, HQ SACT
- Lieutenant General Iulian Berdila, Special Advisor to the Command Group, SHAPE



Content

Recognizing the magnitude of advancing and implementing MDO throughout the Alliance, both NATO and member nations are at the initial stages of plotting the incremental pathway. It is imperative to pinpoint and overcome specific challenges to guide the evolving path, fostering alignment between national and NATO endeavours for a seamless integration of MDO capabilities.

Conversations regarding the national challenges in implementing MDO brought to light a set of notable observations, comprising:

- Diverging national perspectives span a spectrum from wholeheartedly embracing and incorporating the MDO Concept, Vision, and Definition to formulating initial definitions and concepts in the development of unique national approaches. Striking a balance that accommodates these diverse viewpoints is crucial for the success of MDO integration.
- The range of national implementation initiatives demonstrates significant variability, with endeavours utilizing both top-down and bottom-up approaches. Some initiatives commence by establishing architectural frameworks and delineating lines of effort, while others concentrate on specific projects aimed at achieving multi-sensor integration, multi-effector connectivity, and combat cloud initiatives. A nuanced understanding of these diverse approaches is essential to harness the collective strength of MDO.



- Digital Transformation emerges as a linchpin for success, with a sharp focus on data-centricity and the technologies that underpin it. Rigorous monitoring and understanding of developments with the collection of pertinent metrics will play a pivotal role, and the utilization of comprehensive questionnaires can provide invaluable insights, aiding in the establishment of a robust maturity framework.

- Achieving the full potential of MDO within the NATO enterprise necessitates a profound cultural shift in traditional C2 relationships. The pivotal role of education, training, and exercises cannot be overstated, and NATO should proactively support this transformation through the provision of an all-encompassing education and training package that fosters adaptability and proficiency in the MDO landscape.

- Collaborating and synchronizing with non-military entities, including non-military IoP and actors, presents an avenue to mitigate risks and elevate the probability of mission success. Despite current structured efforts, there is a recognized need

for enhanced agility in these collaborations. Aligning the activities of non-military lines of effort will require concerted national and NATO efforts, emphasizing the importance of a cohesive approach to maximize the impact of MDO across all domains.

The recognition of the significance of advancing and implementing MDO within NATO and member nations has set the stage for an incremental pathway. As both NATO and member states navigate the initial stages, addressing and overcoming specific challenges will be paramount to ensuring a seamless integration of MDO capabilities. The complexity of this endeavour is underscored by diverse national perspectives, variability in implementation initiatives, emphasis on digital transformation, cultural shifts in C2 relationships, and collaboration with non-military entities. Fostering alignment between national and NATO activities is not only crucial but essential for harnessing the collective strength of MDO and maximizing its impact across all domains.

Implementation of MDO across the NATO Command Structure

Moderators:

- Vice Admiral Guy Robinson, Chief of Staff, HQ SACT
- Brigadier General Mark Lobel, Assistant Chief of Staff for Strategic Development of Forces, SHAPE



Content

The seamless and effective implementation of MDO within the NATO Command Structure hinges on establishing a harmonious connection and fostering a culture of adaptability across the entire organization. This transformative approach necessitates a comprehensive facilitation of change that transcends hierarchical boundaries, reaching all levels of command. To ensure success, there must be a synchronized effort to integrate MDO principles into the operational fabric of NATO, fostering a shared understanding and commitment to cross-domain collaboration. This entails not only technological integration but also a cultural shift towards agility and interoperability. By aligning objectives and strategies at every echelon, from the highest command levels to the operational frontline, NATO can optimize its collective capabilities and respond effectively to the dynamic challenges presented in the contemporary multi-domain warfare environment.

Key observations emerged from discussions, addressing critical areas such as education, digital transformation, and the recognition of evolving domains:

- There was a prevalent assumption that everyone within NATO comprehends the nature and trajectory of MDO. This reveals a potential gap in awareness, indicating that a shared understanding of MDO may not be as pervasive as assumed. Addressing this assumption becomes a foundational step in ensuring a cohesive and informed approach to MDO implementation.
- Recognizing the perceived gap in understanding, the imperative for comprehensive education underscores the need for an extensive educational initiative across NATO. It calls for initiatives aimed at disseminating knowledge about what MDO entails and, crucially, what it means for the Alliance. This extends beyond a basic introduction, necessitating a detailed exploration that identifies the nuances distinguishing MDO from Joint operations.
- The discussion on talent management reflects an acknowledgment that MDO requires a specialized skill set and the right personnel. To clarify perspectives on the right people and the requisite skills, there is a call for focused training and education programmes. This involves identifying and

developing individuals with the proficiency needed to navigate the complexities of MDO effectively.

- Highlighting the importance of political and decision-maker support, there is a requirement for making the prospect of MDO tangible. This involves translating the abstract concept of MDO into tangible benefits and strategic imperatives. Decision-makers need to grasp the tangible outcomes and implications of investing time and resources in MDO, aligning the concept with broader political and strategic objectives.

- The discussions stressed the importance of integrating and aligning MDO into NATO thinking and planning, including as part of the Comprehensive Operations Planning Directive process. This entails embedding an understanding of MDO from the early planning stages of operations. By integrating MDO into the planning framework, NATO ensures that operational strategies are inherently aligned with the principles of MDO, fostering a holistic and synchronized approach from conception to execution.

- Emphasizing the critical need for strategic information sharing with timely and accurate information sharing is needed within NATO. The digital backbone is recognized as the essential infrastructure for this exchange, necessitating standardized protocols and a collaborative culture. This strategic imperative ensures agile decision-making and enhances overall responsiveness.

- Emphasizing the significance of the digital backbone will underscore its pivotal role as the technological infrastructure foundation for NATO. This goes beyond technical intricacies to encompass its role in enabling secure, resilient, and scalable digital operations. A clear understanding informs decisions regarding investments, upgrades, and the integration of emerging technologies.

- The transformative impact of technological advancements on enhancing NATO's operational capabilities is crucial. Integration of AI, machine learning, and advanced analytics into the digital backbone acts as a force multiplier, offering enhanced situational awareness and the ability to process real-time data. This advocates for a strategic approach to technology adoption to maintain NATO's technological prowess and operational effectiveness.

- Acknowledging that Cyberspace and Space are not yet fully designated as domains but are still considered enabling functions. It is evident that further development is required to operationalize them, including the potential to integrate with civil partners. This necessitates additional investment to facilitate the involvement of the right people, skill sets, and external relationships. It also raises questions about the Joint Operations Areas for Cyberspace and Space domains.

- The implementation of MDO is a gradual process that requires substantial time investment. Despite its time-intensive nature, sustained commitment to resources and adaptation is crucial for ensuring Alliance preparedness in the evolving security landscape.

- The IS perspective highlights the implementation of the Space domain, acknowledging that synchronization will require time and effort. NATO must identify military space requirements, determine necessary space effects and establish the level of ambition in Planning Guidance 2027.

- The IMS perspective underscores the need to understand NATO's expectations from non-military actors to enable MDO. This calls for clarification on requirements and the rationale behind them, with links to educational need and a thorough understanding from both internal and external stakeholders.

The discussions highlighted key considerations for implementing MDO within NATO. Addressing a potential gap in understanding, advocating for comprehensive education initiatives, refining talent management, securing political support and integrating MDO into NATO's planning processes are crucial. Recognizing the pivotal role of the digital backbone, leveraging technological advancements, and acknowledging the evolving status of Cyberspace and Space domains are vital components. The perspectives from various stakeholders emphasize the need for sustained commitment, adaptation, and collaboration to ensure NATO's readiness in the ever-changing security landscape.

Cross Domain Command

Moderators:

- Lieutenant General David Julazadeh, Deputy Chief of Staff for Capability Development, HQ SACT
- Major General Jan Dam, Air Chief for Royal Danish Air Force



Content

An integrated Alliance must prioritize interoperability for seamless coordination, ensuring strategic flexibility to adapt to diverse threats, and advancing information dominance through cutting-edge technologies. The implementation of cross-domain command is pivotal for successful MDO. Key components, such as joint training, technological innovation and strict adherence to ethical and legal frameworks, play crucial roles in ensuring the Alliance's effective responses to contingencies across different domains.

The deliberations centred on pivotal aspects essential for cross-domain command and the effective execution of MDO within the NATO enterprise. These included aspects such as reconfiguration, disaggregation, networked architecture and education:

- Realizing the full potential of MDO within NATO requires a significant cultural shift in traditional C2 relationships. This shift involves redefining norms to foster collaboration, adaptability and integration across military domains, promoting flexibility and information-sharing for a more effective force in addressing contemporary security challenges.
- The existing (historical) force structures and thought processes face limitations in terms of agility, being firmly anchored in national caveats and proving unsuitable for the demands of cross-domain warfare. This assertion underscores the need for a fundamental re-evaluation of conventional military structures and mind-set, emphasizing the necessity for enhanced flexibility, adaptability, and a more collaborative approach across various domains. The inherent constraints in current force structures highlight the imperative to evolve strategies that transcend traditional boundaries and enable a more dynamic and responsive military capable of effectively navigating the complexities of cross-domain warfare.

- In the evolving landscape of future battlespaces, the Alliance anticipates a rise in hybrid and non-traditional threats, compelling a heightened level of integration with other IoP. Responding effectively to these multifaceted challenges may entail nations contributing more extensively to the overarching NATO C2 structure. This increased commitment aims to bolster greater integration of capabilities and facilitate enhanced information sharing among member nations, ensuring a collective and adaptive response to the diverse and complex security threats that may emerge.

- To enhance resilience and reduce vulnerability to targeted attacks, there is a compelling argument for moving away from centralized command locations. This involves physical disaggregation of C2 nodes, creating a more robust operational structure that can adapt and withstand potential attacks.

- Enhancing decision-making speed in a disaggregated C2 architecture is crucial for developing MDO-C2 at scale. This underscores the importance of rapid and informed decision-making in distributed operations across all domains, aligning with the need for agility and adaptability in modern warfare.

- NATO's continued commitment to digital transformation is essential, focusing on improving the speed and efficiency of information sharing. This involves optimizing digital infrastructure and exploring ways to potentially remove current restrictions, aligning with the need for a more agile and responsive Alliance in the face of evolving security challenges.

- Establishing a fully networked C2 system is crucial for effectively leveraging multiple effects across the battlespace against a diverse range of state and non-state actors. This networked approach ensures seamless coordination, enhanced situational awareness, and dynamic responses to evolving threats, reflecting the contemporary need for interconnected military operations.

- To facilitate change to traditional C2 structures, widespread education on the MDO concept is essential across NATO. This initiative must aim to instill a comprehensive understanding of MDO principles, fostering

adaptability and innovation at all levels and enabling a more responsive and effective Alliance.

- The younger generation of military officers is more likely to demonstrate a heightened aptitude for embracing transformative initiatives and be more open to adopting innovative C2 models. The adaptability and technological familiarity of this younger cohort position them as influential advocates for instigating essential changes in military strategies, fostering a more agile and interconnected force ready to navigate the intricacies of modern dilemmas.

- Integrating MDO education into Alliance perspectives should start with PME. This entails incorporating MDO principles into educational frameworks, providing military personnel with the necessary skills for strategic versatility and adaptability, particularly in the context of cross-domain command.

The imperative to pursue a cross-domain command concept to complement MDO within NATO is evident in the comprehensive considerations discussed, ranging from cultural shifts and structural reconfigurations to the embrace of technology and education. The Alliance's commitment to interoperability, flexibility, and information dominance necessitates a transformative approach that transcends traditional boundaries, fostering a more agile and responsive force capable of effectively navigating the complexities of modern cross-domain.





Speeches and Biographies





Ice-Breaker Speeches

Ice-Breaker Speech by General Flemming Lentfer, Danish Chief of Defence

Welcome to the Multi-Domain Operations Conference 2023 and to our capital.

First, I would like to acknowledge the hard effort put into forming this conference.

I would like to thank Allied Command Transformation and The Royal Danish Defence College. Your hard work in the preparations have made this MDO conference come to life.

There are more than 350 persons registered for the conference. This is an important recognition that there is a need for this conference in order for us to conduct the MDO transformation together.

I hope that you will find the presentations and discussions that we are going to have both inspiring and insightful.

For Denmark, the concepts, doctrine and requirements that emerge, as NATO MDO becomes operationalized across the alliance will have a substantial impact on how Denmark equips trains, operates, organizes and deploys its future armed forces.

NATO MDO can act as a guiding light for all alliance members as they develop their armed forces to operate and win in the future operating environment.

It is vital that Denmark and other small states within the alliance have a voice in the development of MDO over the next few years. This conference will assist not just Denmark, but all of us in getting on the same page in terms of understanding NATO's vision of MDO and building future interoperable warfighting capabilities.

Finally, the conference obviously presents an excellent opportunity for networking amongst key-stake-holders. I encourage all of you to take advantage of this opportunity for the good of your nation, your headquarters and not least for our Alliance.

I wish you all a fruitful and enlightening conference. Thank you.



Ice-Breaker Speech by General Philippe Lavigne, Supreme Allied Commander Transformation

General Lentfer, dear Flemming,

Thank you for your warm welcome and your kind words.

I take this opportunity to thank the Danish authorities and all your colleagues who contributed to this event.

What better place than Copenhagen to host an MDO conference.

Think back to an early example of the orchestration and synchronization of activities, across domains and environments.

That happened right here in Copenhagen's harbour.

Ok, I'm using orchestration in the musical meaning of the word ...

And the environments involved are the sea and a royal palace,

While the air domain was represented by a single seagull...

But for me the Little Mermaid is a great example of the magic made possible by orchestration, synchronization and transformation!

On a more serious note, I am happy to measure the progress accomplished since our last big MDO conference in the UK.

Since March 2022, the Council has endorsed the Concept, and we have an agreed definition.

And for anyone who has dealt with the NATO terminology process... that second success may be the most impressive!

The Allies understand the urgency.

They share our determination to move ahead, and to move forward at speed.

We have our Warfare Development Agenda and we are working on the MDO Implementation Roadmap to light our way ahead.

MDO is enabled by Digital Transformation and we now have our Digital Transformation Implementation Strategy.

We will be making use of all the tools in our kit, including EDTs.

We are working hand-in-hand with ACO to make MDO a part of all our plans, objectives and targets.

And we need to ensure that the Nations are fully involved, so that we all move ahead together,

Ideally at the same speed. And that is why this conference is so important, it offers an opportunity to share and exchange ideas and approaches, and to deliver fast!

And to enjoy the pleasures of this great European city.

In a second we will raise a glass to our great Alliance, to progress on the way to an MDO-enabled NATO.

But first I am delighted to introduce Mr Nicu Falcoi, Vice President of the NATO Parliamentary Assembly.

Thank you for your attention and WIN AS A TEAM!



SACT's Opening Remarks

General Lentfer, CHOD of Denmark, dear Fleming, Admiral Hranj, CHOD of Croatia, dear Robert, Dr Bruitenbauch, Dean of the Royal Danish Defence College we are already working with you and more to come in the future.

Distinguished Guests, Ladies and Gentlemen.

NATO safeguards the freedom and security of all its members using both political and military means. The evolving security environment increasingly requires that NATO will take a structured and tailored approach that uses non-military and military tools in a deliberate, coherent, and sustained manner, throughout the full spectrum of peace, crisis and conflict.

NATO uses a variety of non-military tools which support the Alliance's three core tasks.

It also continues to serve as a platform for enhancing the coherent use of these tools by Allies, under their own authority and control, and alongside other international actors."

This is not me speaking. This statement is paragraph 59 of the Vilnius NATO Summit Communiqué, last summer.

With that, the North Atlantic Council agreed that MDO is more than an evolution of joint operations.

The urgency for the Alliance to conduct multi-domain operations is based on the rapidly changing security environment reflected in NATO's new Strategic Concept.

Simply put, it is more, faster, and everywhere.

We must change our model of warfare. Because of the intensity, the speed, and the versatility of threats that are no longer only military... think energy security, disinformation and cognitive, climate change, and so on.

It requires the Alliance to rethink the conduct and evolution of warfare in the short, medium and long term, in order to maintain NATO's military credibility, particularly in the context of Russia's war of aggression against Ukraine.

Evolving NATO beyond joint land, sea and air operations to a more data-centric multi-domain approach, drawing on the full range of Alliance capabilities, including cyber and space, including Cognitive Warfare, and synchronizing military and civilian, government and private efforts, is a decisive factor in maintaining peace and security for the Alliance. Data centrality will offer more interoperability to better understand / decide faster / be stronger together.

Multi-domain is not a new idea. It's a profound transformation that began some time ago.

It was already part of the NATO Military Strategy in 2019, the Deterrence and Defense of the Euro-Atlantic Area – SACEUR's

concept – in 2020, and of the NATO Warfighting Capstone Concept – ACT's one – in 2021.

It has also been incorporated into NATO doctrine through the Allied Joint Working Group and the NATO Standardization Organization.

Finally, by endorsing the MDO concept last May, nations agreed to support NATO's transformation into an MDO-capable Alliance.

The journey has begun, and it's off to a fast start.

What does NATO actually do for MDO?

On the one hand, Allied Command Transformation is leading the short- to long-term development of MDO through our Warfare Development Agenda and MDO Implementation Roadmap.

On the other hand, Allied Command Operation is aligning its concept, the DDA, with the multi-domain approach to become an MDO warfighting headquarters.

Together, ACT and ACO are following an incremental approach, to implement multi-domain into every aspect of our organization and procedures, such as the targeting process, the common operational picture, the battle rhythm, and the development of a multi-domain strategic operations center.

This change in approach is very important to understand.

We no longer have 'ACO-for-operations-today' on the one hand and 'ACT-warfare-developer-for a distant future' on the other.

From now on, operation planning and defense planning are going to be concurrent and interrelated.

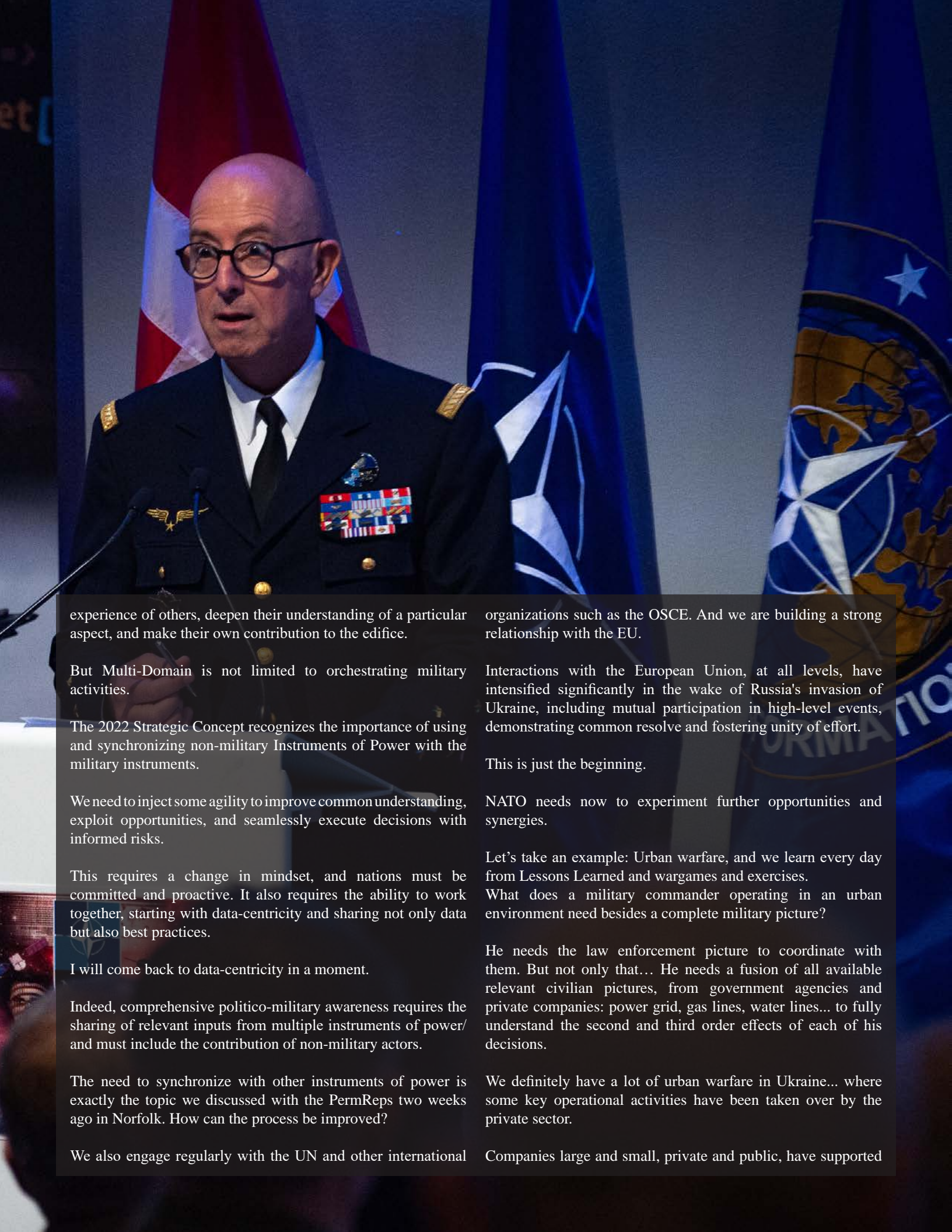
In this way, step by step, topic by topic, we will be able to put multi-domain at the heart of what we do. And that's exactly what is happening the areas I just mentioned: Targeting, Battle Rhythm, and so on.

Of course, we can't do it alone. We have neither the skills nor the legitimacy.

The nations need us to set the collective course towards a MDO-enabled Alliance. But we need all nations. We need to integrate all national perspectives.

Nations that have begun to experiment with multi-domain approaches have a role to play in sharing early feedback and guiding others.

Those just starting out should be able to benefit from the



experience of others, deepen their understanding of a particular aspect, and make their own contribution to the edifice.

But Multi-Domain is not limited to orchestrating military activities.

The 2022 Strategic Concept recognizes the importance of using and synchronizing non-military Instruments of Power with the military instruments.

We need to inject some agility to improve common understanding, exploit opportunities, and seamlessly execute decisions with informed risks.

This requires a change in mindset, and nations must be committed and proactive. It also requires the ability to work together, starting with data-centricity and sharing not only data but also best practices.

I will come back to data-centricity in a moment.

Indeed, comprehensive politico-military awareness requires the sharing of relevant inputs from multiple instruments of power/ and must include the contribution of non-military actors.

The need to synchronize with other instruments of power is exactly the topic we discussed with the PermReps two weeks ago in Norfolk. How can the process be improved?

We also engage regularly with the UN and other international

organizations such as the OSCE. And we are building a strong relationship with the EU.

Interactions with the European Union, at all levels, have intensified significantly in the wake of Russia's invasion of Ukraine, including mutual participation in high-level events, demonstrating common resolve and fostering unity of effort.

This is just the beginning.


NATO needs now to experiment further opportunities and synergies.

Let's take an example: Urban warfare, and we learn every day from Lessons Learned and wargames and exercises. What does a military commander operating in an urban environment need besides a complete military picture?

He needs the law enforcement picture to coordinate with them. But not only that... He needs a fusion of all available relevant civilian pictures, from government agencies and private companies: power grid, gas lines, water lines... to fully understand the second and third order effects of each of his decisions.

We definitely have a lot of urban warfare in Ukraine... where some key operational activities have been taken over by the private sector.

Companies large and small, private and public, have supported



Ukraine's military operations. They have been instrumental in both providing effective cybersecurity and maintaining functioning information technology networks.

As part of these efforts, these companies have established coordinated mechanisms to work with relevant government actors.

I recently visited the University of Texas at Austin and we talked a lot about architecture and urban centers.

They are helping us in our modeling and simulation efforts for MDO to make our wargames more realistic by enhancing the typical behavior of "green" players in their interactions with military forces.

The private sector has demonstrated how companies can support military and security operations. They have proved their new independence from governments, but also their willingness to act.

We in NATO must now reach out to the leaders of the tech companies and begin to build a framework to optimize their integration through experimentation and training.

The relationships we develop can be a game changer for future conflicts.

In order to make the most of all the connections we'll be making with the political level, international organizations, other instruments of power and the private sector, we need to configure NATO and provide an interface for the exchange, storage and exploitation of all kinds of data.

This configuration is part of NATO's digital transformation. It is critical, as the foundation for multi-domain operations.

And in an age of data dominance and the need for interoperability across nations, digital transformation must connect and bring coherence to all these capabilities and all domains by design to enable an MDO and data-centric Alliance, through the interconnection of Forces, Platforms and Systems; and secured and Resilient Digital Systems and Data.

The integration of EDTs into multi-domain operations will also open up new opportunities.

Far from replacing the commander or disempowering leadership, artificial intelligence should allow us to step back and see the situation more clearly by removing the fog of war / so that we can better understand and make the best possible decisions, faster.

I told you I would come back to Data centrality. Because Data

centricity is at the heart of NATO's digital transformation. Recognizing the centrality of data in our defense architecture, moving to an "as-a-service model", will open the door to improved resilience, greater scalability and better performance for the warfighter.

One possibility would be to create a military-grade Combat Cloud, a decentralized, cyber-secure, collaborative and shared network across land, air, sea, cyber and space domains.

Through this cloud, we would be to connect all forces and integrate heterogeneous platforms to enable real-time information sharing.

But the Alliance's digital transformation will not only rely on technology to move to MDO.

We also need to review procedures and train operators to understand the MDO approach, right down to the lowest level. A programme of education and training in this new "philosophy" is currently being established, both by individual nations and by the Alliance, which will need to gradually incorporate MDO into its collective exercises.

Speaking about education and training, MDO can also be instrumental in addressing the growing concern about the increasing infiltration of misinformation, or "fake news," into public discourse and politics in many Western democracies.

Through social media and across the World Wide Web, our enemies and adversaries are working hard to influence the minds of NATO populations, exploiting our openness to influence the attitudes and behaviors of our 1 billion citizens.

As technology is likely to have a devastating effect in shaping the virtual and cognitive dimensions, the integration of cognitive technologies will enhance the ability of our competitors to operate across domains, generating tactical and strategic advantages and challenging NATO's secure communications and decision-making capabilities.

To succeed, we must be able to out-think the enemy.

This will also require a rethinking of the way forces are organized in peace and war... In a data-centric organization, information dissemination is a priority.

Yesterday the joint commander exercised command and control over the forces present in his Joint Operation Area. The new domains of space and cyber have opened up infinite possibilities.

The revolution in terms of speed, agility and precision is



comparable to that once brought by air power, but it is far more complex to integrate because it is borderless and because it will certainly remain at the strategic level.

We must therefore think in terms of effects to be produced rather than capabilities to be controlled.*

MDO is not a standard military concept and must be seen as part of a broader approach to the instruments of power: diplomatic, informational, military, economic.

Digital Transformation will be fundamental to the success of Multi-Domain Operations as NATO transforms to a data-centric organization that appreciates, shares, exchanges and exploits data to achieve its objectives.

Our competitors and adversaries challenge Allies every day by and through the pervasive competition we have discussed.

Adapting the Alliance to multi-domain operations will enable NATO forces to operate with agility and unity across all domains and environments to successfully meet these challenges.

Now let's delve into MDO by exploring the NATO and national implementations. We need to establish a roadmap, not as a very well-defined French Garden (which will take too long at 31 soon 32) but as an English garden. In parallel we will implement MDO with a bottom-up approach. We will also discuss technology and experimentation to maintain the military edge. And we will share how to improve synchronization between military and non-military instruments of power, before closing the day with the crucial issue of education and training.

Because beyond technology and data, we should never forget that people are the most precious resource we have in NATO.

Thank you for your attention.

General Flemming Lentfer, Danish Chief of Defence



General Flemming Lentfer was appointed Danish Chief of Defence in December 2020. He has spent most of his professional life in the Armed Forces and has had a wide range of positions within operations, logistics, plans and policy.

He entered the Danish Armed Forces as a conscript in the Air Force, where he also completed his sergeant and officer training. During the first decades of his career, operational missile defence (surface-to-air) was the tactical focal point of his career, which led to his appointment as Commander of the Air Force's Hawk Battalion West.

In continuation of the tactical and operational assignments, throughout his career Lentfer has served as a staff officer and a CO in several different positions in the Armed Forces as well as the Ministry of Defence and its affiliated agencies at the military strategic level.

His positions have encompassed Chief of Staff for Policy and Coordination, and Chief of Joint Operations in the Danish Defence Command. Most recently Lentfer held the position as Director and National Armaments Director at the Danish Ministry of Defence Acquisition and Logistics Organisation (DALO).

Lentfer's strategic ambitions for the Danish Defence are focused on retention management, kill-chain optimization through digitization, and priming the Defence for future tasks and battlefields.

His leadership core values are cooperation, trust, transparency, integrity and competence.

Flemming Lentfer is Commander of the Legion of Honour (Legion D'Honneur) and Commander of the order of Dannebrog. In addition to this he holds the Air Force Medal of Honour for 25 years of service, the Reserve Officers Association of Denmark's Medal of Honour, the Home Guard's Head Sign and the Nordic Veterans Medal of Honour.

Flemming Lentfer was born March 1st 1964 in Copenhagen, Denmark. He is married and the father of three children.

General Philippe Lavigne, Supreme Allied Commander Transformation



The North Atlantic Council approved General Philippe Lavigne's nomination to the Supreme Allied Commander Transformation post on 28 May 2021.

General Lavigne has accumulated a remarkably diverse and robust operational experience. Having joined the French Air Force Academy in 1985, he qualified as a pilot in 1989 and flew the Mirage 2000 during operations in the former Yugoslavia and Iraq before assuming command of the 1/5 Fighter Squadron "Vendée" in 2001. He subsequently served within the Paris-based Joint Strategic Planning and Command Operations Centre (CPCO), where he contributed to planning several peacekeeping and humanitarian operations from 2003 to 2005.

After serving in the Planning Office of the French Air Force Staff, where he was tasked with issues related to space and European cooperation in the field of simulation, he was selected to attend the Centre for Higher Military Studies (CHEM) in 2008 and the "Defence Policy" course at the Institute of Advanced Studies in National Defence (IHEDN). He was appointed Deputy Director at the General

Secretariat for Defence and National Security in Paris in 2009, where he served for three years, dealing with several sensitive and complex issues in an interagency setting with multinational entities.

He served twice in high-level joint positions, first as the Information Director within the Joint Staff of the Armed Forces between 2012 and 2014 and then as Director of the French Chief of Defence's front office from 2016 to 2018. Between those two postings, he commanded the Kabul International Airport with its 5000 staff and 57 nationalities and supervised the transfer of military responsibility for the airport to the Afghan civilian authorities.

On 31 August 2018, he was appointed Chief of Staff of the French Air Force, renamed the French Air and Space Force in 2020, whilst under his command.

General Lavigne was made a Commandeur in both the Légion d'honneur and the ordre national du Mérite, and awarded the Croix de la Valeur Militaire. He has accumulated over 2800 flight hours and flown 46 combat missions on the Mirage 2000.

He is married to Isabella, and they have three children. He continues to play rugby, a long-held passion, whose cherished values have inspired his motto: "Win as a Team".

Dr Olivier Schmitt, Professor at Center for War Studies, University of Southern Denmark



He is a professor (with special responsibilities) at the Center for War Studies (University of Southern Denmark – SDU). He is a founding French Association for War and Strategic Studies (AEGES) member. I was vice president, scientific director, and a European Initiative for Security Studies (EISS) board member.

He is an associate editor of the European Journal of International Security and a board member of the Journal of Strategic Studies. His full CV (including forthcoming publications) is available [here](#). Before joining the University of Southern Denmark in 2015, he obtained my PhD from the Department of War Studies, King's College London. He was a post-doctoral research fellow at the University Of Montreal Center for International Studies (CÉRIUM). He holds MA degrees from the Graduate Institute of International and Development Studies (Geneva) and Sciences Po Aix.

A reserve officer in the French Air and Space Force, he has policy experience at the French MoD and NATO. He also worked for two think tanks: the Geneva Centre for the Democratic Control of Armed Forces (DCAF) and the International Institute for Strategic Studies (IISS). Between 2020 and 2022, He was on secondment from SDU, serving as director of research and studies at the French Institute of Higher National Defence Studies (IHEDN). He conducts research in two broad fields.

First, he is interested in security and strategic studies, particularly multilateral military cooperation, comparative defence policies, arms control, military transformation and the changing character of warfare. Second, he looks at the role of ideas and norms in world politics, with research on strategic narratives, influence and propaganda, and far-right ideologies.

His two current main research projects are a monograph on the dynamics of military change since 1870 and a co-authored monograph on the links between the French far-right and Russia since the Russian Revolution.

Vice Admiral Guy Robinson CB OBE

Chief of Staff, NATO Allied Command Transformation



Guy Robinson joined the Royal Navy in 1986 as a warfare officer. His seagoing career has been primarily spent in frigates and destroyers, serving as a bridge watchkeeping officer, navigator and then Principal Warfare Officer. He has been fortunate to command three warships: the patrol vessel HMS GUERNSEY, the Type 42 Destroyer HMS EDINBURGH and the Type 45 Destroyer HMS DARING. In 2003, he commanded EDINBURGH during the combat phase of the 2nd Gulf War and was subsequently awarded a Mention-in-Despatches. In 2008 he operated from the Iraqi Khawr al Amaya offshore oil terminal as Commander Task Group 158.1, running operations in the Northern Arabian Gulf. In 2012, he took DARING on the first operational deployment of a Type 45 to the Middle East. From 2015 through 2016 he was the Deputy Commander of United Kingdom Maritime Forces, the Royal Navy's high readiness battle staff. During that assignment he assumed duties as Commander of Combined Task Force 150, the counter-terrorism task force operating in the Indian Ocean. In his most recent command assignment (2017-21) he was Deputy Commander at Naval Striking and Support Forces NATO (STRIKFORNATO) based at Oeiras, Portugal; a deployable Joint battle staff whose primary role is the integration of high-end U.S. maritime capabilities into NATO operations.

During assignments ashore, Vice Admiral Robinson has served in the UK's Ministry of Defence (MoD), working as the financial programmer in the above water equipment capability area. He also served on the staff of Flag Officer Sea Training staff as Commander Sea Training where he was responsible for the training of all Royal Naval major warships, from frigates to aircraft carriers, as well as a multitude of ships from both NATO and non-NATO navies. As a captain he served in the MoD's Development, Concepts & Doctrine Centre (DCDC) where he was responsible for generating maritime concepts and high-level doctrine. His most recent shore assignment (2013) has been in Navy Command Headquarters as the Assistant Chief of Staff (Warfare), where he was responsible for the assessment of the Fleet's warfighting capability. He became Chief of Staff at Headquarters Allied Command Transformation in July 2021.

When in the UK, Vice Admiral Robinson lives in Hampshire with his wife Mel, a Commodore in the Royal Navy, and their two adult children Max and Maisie. He is a graduate of the UK Higher Command and Staff Course (2013), the US Coalition Force Maritime Component Commanders' Course (2015), the Royal College of Defence Studies (2017) and is an alumnus of the Windsor Leadership Trust. He holds a master's degree in defence studies from King's College London. Her Majesty Queen Elizabeth appointed him as an Officer in the Military Division of the Most Excellent Order of the British Empire in 2013. His Majesty The King appointed him as a Companion of the Most Honourable Order of the Bath in 2023.

Major General François-Marie Gougeon, Director Policy and Capabilities Division, International Military Staff, NATO HQ



Upon graduation from Saint Cyr in 1991, François-Marie chose to serve in the Infanterie de Marine, specialising in armoured reconnaissance. He enjoyed multiple deployments throughout his career, including in Former Yugoslavia, the Central African Republic, Rwanda, the Republic of Djibouti for a 2-year tour, Kosovo, the Ivory Coast, and more recently, two deployments to Mali, first as Commanding Officer of Battle Group 3 in 2013, under Operation Serval, then in 2019-2020 as chief of staff of the MINUSMA Force.

He commanded the 1st Marine Regiment from 2011 to 2013. His senior staff assignments include the French Chief of Defence's, as deputy chief, three years at the Military Strategy Division of the Joint Staff, dealing with joint capstone documents, and the Directorate General for International Relations and Strategic Affairs (DGRIS) of the Ministry of Defence, where he was deputy director for Defence Strategy from 2016 to 2019 and took an active role in the drafting of the 2017 National Strategic Security Review.

His NATO assignments include a first stint at Allied Command Transformation as a special assistant to the Commander from 2005 to 2008 and a second experience as National Military Representative at SHAPE from 2019 to 2021. An alumnus of the Centre des Hautes Etudes Militaires and the Institut des Hautes Etudes de Defense Nationale, he has a Master's in military studies from the US Marine Corps University.

He is a graduate of the US Marine Corps Command and Staff College.

He is married to Claude with two daughters and a son.

Major General Jacob Alexa, Chief of Plans and Capabilities, Defence Command Denmark



Jacob Alexa was born in 1973 and raised in Ebeltoft, Denmark, by his Danish mother and Hungarian father. He joined the Royal Danish Air Force in 1992, right after high school, serving the first years as a drill sergeant and platoon commander at the air bases in Karup, Aalborg and Tirstrup. He then commenced training as a Tactical Control Officer within the ground-based air defence (HAWK), followed by an Officer Commissioning Course at the Royal Danish Air Force Academy.

After finishing the Academy, he served as Operations Officer and Head of Operations at 542 SQN, followed by Junior Staff Course. Then, as Captain, he served as Tactical Director at Control and Air Defence Centre East before he was assigned to the Air Materiel Command Planning Section, working with strategic planning and defence agreements.

In 2004, he was appointed Aide-de-Camp to the Minister of Defence. After the Joint Senior Staff Course in 2007, he deployed to Baghdad, Iraq, serving as Military Advisor/Liaison Officer to MNF-I for the United Nations Assistance Mission in Iraq. Returning to Denmark in 2008, he joined the

Defence Command Forces Planning Branch. After this term, Jacob Alexa was assigned to the Operations Department in the Ministry of Defence – first as a desk officer, then three years as Head of the Operations Department.

In 2014, Jacob Alexa – now a Colonel – was appointed Head of the International Operations Division at Defence Command. He then shifted to Chief J5 in the Joint Operations Staff and Vice Chief of Joint Operations. In late 2018, he was appointed Director of Air Force Systems at the Ministry of Defence, Acquisition and Logistics Organisation (DALO).

Jacob Alexa was promoted to Major General and assigned as Deputy Permanent Secretary State of State for Defence, Director of Programmes and Investments.

Jacob Alexa and his wife, Anne Mette, reside in Farum, north of Copenhagen. They have three daughters, Caroline (1995), Charlotte (2000) and Christine (2003). In his spare time, he enjoys family activities and music – and tries his best to stay in shape.

Lieutenant General Iulian Berdila, Special Advisor to the Command Group, SHAPE



Starting in July 2023, LGEN BERDILĂ joins SHAPE as a SPECIAL ADVISOR to the Command Group. He was appointed Deputy Chief of Defense for Operations and Training in Romania in April 2023.

He graduated from the Field Artillery Officers School, Sibiu, in 1992. His first assignment was as a multiple-launch rocket system (MLRS) platoon leader at the 16th Artillery Regiment. One year later, he joined the 2nd Infantry Battalion “Calugareni” as an antitank platoon leader, fire support officer, and antitank battery commander.

During his service, he fulfilled several joint and multinational staff assignments as the Chief of Staff and Deputy Chief of Staff for Operations in the 2nd Infantry Division, G-5 for the Land Component Command, Aide-de-Camp for the Chief of the Romanian General Staff and NATO integration planner for the Romanian Land Forces. His operational experience includes deployments in Multinational Force Iraq as a Coalition operations planner in 2006 and in ISAF Afghanistan as a Battalion Commander with the 1st Mechanized Brigade in Zabul Province in 2011. His previous command

assignments include Commander of Romanian Land Forces (2020-2023), Commander of Headquarters Multinational Division South-East (2019-2020), Head of Strategic Planning Directorate (2017-2019), Commander of 81st Mechanized Brigade “General Grigore Bălan” (2015-2017), Commander of 2nd Infantry Battalion “Călugăreni” (2010-2012).

LTG BERDILĂ holds a Bachelor of Science (BS) from the Romanian Land Forces Academy and a Master of Military Arts and Science (MMAS) degree in Theater Operations from the US Army School of Advanced Military Studies (2005). He also earned a Master of Strategic Studies degree from the US Army War College in 2014. He attended several career courses, including the US Army Command and General Staff College, Fort Leavenworth, USA, in 2004, the US Army Field Artillery Captain’s Career Course in 2000 and the US Army Officer Basic Course in 1996, both in Fort Sill, USA.

His national awards and decorations include the Romanian Military Command Virtue in Knight Rank, the Honor of Romanian Army (war signs) Emblem, the Honor of Romanian Army (in peacetime) Emblem, the In Service of Peace Merit Emblem and the Land Forces Emblem of Honor. His allied and multinational awards and decorations are the NATO Non-Article V Medal, the US Bronze Star and the US Army Commendation Medal.

LGEN Iulian BERDILĂ was born on 8th January 1971, in Galați, Romania.

Sarah Tarry, Director, Defence Policy and Capabilities Directorate, NATO International Staff



Sarah Tarry has been the Director of Defence Policy and Capabilities within the Defence Policy and Planning Division of NATO’s International Staff since November 2018.

Prior to this she was the Head of the Operational Preparedness Section within NATO’s Operations Division. Previously, she held a variety of positions in the Canadian Ministry of Defence, including as the Deputy Director for Peacekeeping Policy, and the Deputy Director of NATO Policy. Her most recent position prior to returning to Brussels was in Canada’s Privy Council Office, where she worked in the Secretariat responsible for providing foreign and defence policy advice to Canada’s Prime Minister. Between 2008 and 2012, Ms. Tarry served in the Canadian Joint Delegation to NATO and subsequently in the Defence Policy and Planning Division of the NATO International Staff.

Admiral Robert Hranj, Croatian Chief of Defence



Admiral Robert Hranj was born in 1962 in the city of Varaždin, the Republic of Croatia. In 1985 he graduated from the Naval Academy and was commissioned as a Navy Lieutenant.

In 1989 he was given command of the missile patrol craft of the Končar class.

In 1991 he joined the Croatian Navy, and in September 1991 was given command of the Šibenik Fast Attack Craft.

From 1994 to 1998 he served as a Croatian Defense Attaché to the USA.

In 1999 he was appointed the Chief of Section for Bilateral Cooperation in the International Military Cooperation Directorate of the Ministry of Defense.

From 2001 to 2003, he was the Head of the NATO/PfP Office at the MoD.

In 2004 he graduated from the Naval War College, Newport (USA).

After his graduation he assumed the position of the commander of the Croatian Navy Training and Education Command “Petar Krešimir IV” and remained on this duty until 2006, when he was appointed as the Chief of NATO/PfP Division in the Defense Policy Directorate of the Ministry of Defense of the Republic of Croatia.

From 2009 to 2012, he was the Deputy Military Representative to NATO in the Croatian Military Mission to NATO and the EU in Brussels. Upon returning from Brussels he took over the position of the Chief of the Croatian Navy and remained on this position until 2015, when he assumed the duty of the Director of the General Staff.

On March 1st 2020 Admiral Hranj was appointed as the Croatian Chief of Defense.

Admiral Hranj joined Croatian Armed Forces at the very beginning, in September 1991 and participated in Croatian Homeland war. He was promoted to Captain of the Navy in 2000, to Rear Admiral (LH) in 2011, to Rear Admiral (UH) in 2014, to Vice Admiral in 2018 and to Admiral in 2020.

Admiral Hranj is the bearer of several decorations of the Republic of Croatia: Homeland War Memorial Medal, Homeland Gratitude Memorial for 5 and 10 years of meritorious service, Order of Croatian Three-Strand, Order of Croatian Trefoil, Order of Duke Trpimir with Neck Ribbon and Morning Star as well as the US decoration Legion of Merit.

He is married and father of two daughters.

Lieutenant General Tom Copinger-Symes CBE, Deputy Commander UK Strategic Command



Tom spent his early career with The Rifles on operations in Northern Ireland, Bosnia, Kosovo, Iraq and Afghanistan – including with 4 RIFLES on Op TELIC 10 and 5 RIFLES on Op HERRICK 15 - as well as operational and strategy posts at PJHQ and MOD.

In 2014 he formed and commanded 1 Intelligence Surveillance and Reconnaissance Brigade, created to integrate the Army's intelligence collection and exploitation capabilities.

In 2017, after a year as Assistant Chief of Staff Operations in Army HQ, he led a four-month project to develop the Information Manoeuvre concept to explore the benefits of integrating the Army's information-centric and digital capabilities. In his next post, as General Officer Commanding Force Troops Command, he led 30,000 of the British Army's specialist soldiers delivering Information Manoeuvre and Theatre Enablement as central contributions to the British Army's approach to a new era of great power competition, culminating in the formation's re-designation as 6th (UK) Division and the move of the Theatre Enablers to 1st (UK) Division.

In August 2019 he took up his current post, newly created to accelerate Defence's Digital Transformation and increase its adoption and exploitation of data and digital technology.

Subsequently he has also taken on both the Strategy and Digital Transformation portfolios. Tom has a range of extracurricular responsibilities, including Assistant Colonel Commandant (Field Army) of The Rifles; Honorary Colonel of the First Aid Nursing Yeomanry; and President of Infantry Football. He also is an Advisory Board member of Nimbus Ninety and a Trustee of Heropreneurs.

Major General Karol Dymanowski, Deputy Chief of the General Staff, Polish Armed Forces



MGen Dymanowski is a graduate of the Faculty of Electronics at the Military University of Technology in Warsaw and the National Defence Academy in Warsaw, where he completed postgraduate studies (in operations and tactics as well as in defence policy) and received a PhD in defence science.

He began his military service in the 1st Signals Intelligence Centre in Grójec, where in the years of 2001-2007 he served as a reconnaissance officer, head of the direction finding section and head of the data analysis group section.

From 2007 to 2012 MGen Dymanowski served in the Air Force Command Reconnaissance and Electronic Warfare Division-A2. During this time, from 2010 to 2012, he was also a chairman of the NATO Electromagnetic Spectrum Denial Working Group, operating under the auspices of the NATO Conference of National Armament Directors.

In 2012, he was appointed to the position of the Chief of the Office of the Air Force Commander, and from January 2014 Chief of the Office of the General Command Commander.

In 2015, he assumed the duties of Non-Kinetic Operations Division - J9 of the General Command, where he was responsible for civil-military cooperation (CIMIC), information operations (INFOOPS) and psychological operations (PSYOPS).

In March 2016, he was appointed Deputy Director and then (December 2016) Director of the Armaments Policy Department of the Ministry of Defence, while also serving as National Armaments Director.

On 15 August 2018, he was appointed to the rank of Brigadier General. In June 2021, he was nominated to the next rank, Major General, and was assigned to serve in the NATO Supreme Headquarters Allied Powers Europe as Deputy Chief of Staff for Strategic Development and Preparation. On 24 October 2022, he assumed the position of Deputy Chief of General Staff of the Polish Armed Forces.

Lieutenant General Dagvin Anderson, Director Joint Force Development, US Joint Staff



Lt. Gen. Dagvin R.M. Anderson is the Director for Joint Force Development, Joint Staff, the Pentagon, Arlington, Virginia. The J7 supports the Chairman Joint Chiefs of Staff (CJCS) and the joint warfighter through joint force development (JFD) in order to advance the operational effectiveness of the current and future joint force. The J-7 is responsible for the six functions of joint force development: Doctrine, Education, Concept development & Experimentation, Training, Exercises and Lessons Learned.

Originally from Ypsilanti, Michigan, Lt. Gen. Anderson was a distinguished graduate of ROTC program at Washington University in St. Louis. He has flown the KC-135R, MC-130E and U-28A operationally in several contingencies globally. He commanded a special operations squadron, an operations group, a special operations wing and a Special Operations Command, Africa. He was also the Commander of Joint Task Force-Quartz, the repositioning of U.S. forces from Somalia. He was Fellow at the Weatherhead Center for International Affairs at Harvard University and was an Olmsted Scholar in the Czech Republic. Lt. Gen. Anderson has completed six joint staff tours at various echelons.

EDUCATION

1992 Bachelor of Science, Electrical Engineering, Washington University, St. Louis, Mo.

1997 Squadron Officer School, Maxwell Air Force Base, Ala.

2003 Master of International Public Policy, Paul H. Nitze School of Advanced International Studies, Johns Hopkins University, Washington, D.C.

2010 Fellow, Weatherhead Center for International Affairs, Harvard University, Cambridge, Mass.

2018 Capstone, National Defense University, Fort Lesley J. McNair, Washington, D.C.

2018 Joint Forces Air Component Course, Maxwell AFB, Ala.

2021 Joint Flag Officer Warfighting Course, Maxwell AFB, Ala.

ASSIGNMENTS

1. May 1993-June 1994, Euro-NATO Joint Jet Pilot Training, Sheppard Air Force Base, Texas

2. October 1994-September 1996, KC-135R Pilot, 91st Air Refueling Squadron, Malmstrom AFB, Mont.

3. September 1996-May 1999, KC-135R/T Instructor/ Evaluator/Chief Pilot, 91st Air refuelling Squadron, MacDill AFB, Fla.

4. June 1999-May 2000, Student, Czech Language, Defense Language Institute, Monterey, Calif.

5. June 2000-July 2002, Olmsted Scholar, Masaryk University, Brno, Czech Republic

6. August 2002-May 2003, Student, Paul H. Nitze School Of Advanced International Studies, John Hopkins University, Washington, D.C.

7. September 2003-September 2005, Chief of Current Operations, MC-130E, 8th Special Operations Squadron, Duke Field, Fla.

8. September 2005-August 2007, Deputy Director of the Commander's Action Group, Aide-de-Camp to the Commander, United States Special Operations Command, MacDill AFB, Fla.

9. October 2007-April 2009, Operations Officer, 319th Special Operations Squadron, Hurlburt Field, Fla.

10. April 2009-June 2010, Commander, 19th Special Operations Squadron, Hurlburt Field, Fla.

11. July 2010-July 2011, Fellow, Weatherhead Center for International Affairs, Harvard University, Cambridge, Mass.

12. July 2011-July 2013, Commander, 58th Operations Group, Kirtland AFB, N.M.

13. July 2013-June 2014, Senior Aviation Advisor for Counter-Terrorism Operations, Office of the Under Secretary of Defense for Policy, Special Operations/Low-Intensity Conflict, the Pentagon, Arlington, Va.

14. July 2014-June 2016, Commander, 58th Special Operations Wing, Kirtland AFB, N.M.

15. July 2016-June 2017, Special Assistant to the Commander and Director of the Commander's Strategic Initiative Group, United Nations Command-Combined Forces Command-U.S. Forces Korea, Yongsan Garrison, South Korea.

16. June 2017-June 2019, Deputy Director for Operations, Headquarters, U.S. Indo-Pacific Command, Camp H.M. Smith, Hawaii.

17. June 2019-July 2021, Commander Special Operations Command-Africa, Stuttgart, Germany.

18. July 2021-August 2022, Vice Director for Operations, Joint Staff, the Pentagon, Arlington, Va.

19. August 2022-present, Director for Joint Force Development, Joint Staff, the Pentagon, Arlington, Va.

SUMMARY OF JOINT ASSIGNMENTS

1. September 2005-August 2007, Deputy Director, Commander's Action Group, Aide-de-Camp to the Commander, United States Special Operations Command, MacDill Air Force Base, Fla., as major and lieutenant colonel;

2. July 2013-June 2014, Senior Aviation Adviser FOR Counter-Terrorism

Operations, Office of the Under Secretary of Defense for Policy, Special Operations/Low-Intensity Conflict, the Pentagon, Arlington, Va., as a colonel;

3. July 2016-June 2017, Special Assistant to the Commander and Director of the Commander's Strategic Initiative Group, United Nations Command- Combined Forces Command-U.S. Forces Korea, Yongsan Garrison, South Korea, as a colonel;

4. June 2017-June 2019, Deputy Director for Operations, Headquarters, U.S. Indo-Pacific Command, Camp H.M. Smith, Hawaii, as a brigadier general;

5. June 2019-July 2021, Commander Special Operations Command-Africa, Stuttgart, Germany, as a major general;

6. July 2021-August 2022, Vice Director for Operations, Joint Staff, the Pentagon, Arlington, Va., as a major general;

7. August 2022-present, Director for Joint Force Development, Joint Staff, the Pentagon, Arlington, Va., as a lieutenant general.

FLIGHT INFORMATION

Rating: command pilot

Flight Hours: more than 3,400 (738 combat)

Aircraft flown: T-37, T-38, KC-135R/T, C-130E/H/P/J, HC-130P/N/J, AC-130U, UH-1N, TH-1, HH-60, Mi-17, MH-6, MV-22, CV-22, PC-12 and U-28A.

MAJOR AWARDS AND DECORATIONS

Defense Superior Service Medal with three oak leaf clusters

Legion of Merit with oak leaf cluster

Bronze Star Medal

Defense Meritorious Service Medal with oak leaf cluster

Meritorious Service Medal with oak leaf cluster

Air Medal with silver and bronze oak cluster

Aerial Achievement Medal with two oak leaf clusters

EFFECTIVE DATES OF PROMOTION

Second Lieutenant Nov. 19, 1992

First Lieutenant Nov. 19, 1994

Captain Nov. 19, 1996

Major May 1, 2003

Lieutenant Colonel Dec. 1, 2006

Colonel Oct. 1, 2010

Brigadier General Aug. 2, 2017

Major General May 22, 2020

Lieutenant General Aug. 2, 2022.

Major General Gaebelein, Director of the Bundeswehr Office for Defence Planning



Date of birth: 30 April 1960

Place of birth: Weiden, Bavaria

Marital status: married, two children

From – to Assignment

1979 Joins the Bundeswehr, basic training, Air Force Training Regiment 3, Roth

1979 – 1980 Officer training, 6th Student Company, Air Force Officer School, Fürstenfeldbruck

1980 – 1983 Studies aerospace engineering, Bundeswehr University, Munich, engineering degree (Diplomingenieur / Dipl. Ing.)

1984 – 1986 Maintenance Officer, S3, Air Force Maintenance Depot 23, Diepholz

1986 – 1988 S3, Air Force Maintenance Depot 23, Diepholz

1988 – 1991 Commander, Flight-line Maintenance Squadron, Helicopter Transport Wing 64, Ahlhorn

1991 – 1993 Attends 36th General Staff Course (Air Force), Bundeswehr Command and Staff College, Hamburg

1993 – 1995 Chief A4 Division, 5th and 3rd Air Force Divisions, Eggersdorf and Gatow

1995 – 1997 Branchhead S 3 I, Air Force Materiel Office, Cologne

1997 – 1999 Desk Officer, sections Fü L V 1 / Fü L II 3 / Fü L II 1, Air Staff, FMoD, Bonn (Structure and Operation Policy, Air Force Logistics System)

1 AdÜ: Air Commodore = british, Brigadier General = US; bitte Unzutreffendes streichen

1999 Management Accounting Assistant to the Director of Air Staff, Bonn

1999 – 2001 Military Assistant (Air Force) to the Bundeswehr Chief of Defence Staff, FMoD, Berlin

2001 – 2003 Commander Technical Group, Fighter Bomber Wing 32 “ECR”, Lechfeld

2003 – 2004 Chief G3 Division, Military District Command IV “Süddeutschland”, Munich

2004 – 2005 Chief J4 Division, Bundeswehr Joint Forces Operations Command, Potsdam

2005 – 2006 Deputy Chief of Staff Support, Bundeswehr Joint Forces Operations Command, Potsdam

2006 – 2008 Chief of Operations Coordination and Deputy Chief of Staff, Bundeswehr Joint Forces Operations Command, Potsdam

2008 – 2012 Branchhead FüS V1 (Bundeswehr strategic planning - major process responsibility, Federal Audit Office affairs), Armed Forces Staff, FMoD, Bonn

2012 – 2013 Branchhead Plg III 2, Directorate-General for planning (strategic planning requirements, management accounting in the field of strategic planning), FMoD, Bonn

2013 Deputy Commander, Bundeswehr Logistics Command, Erfurt

2014 Head of Division Strategic Defence Planning & Concepts, MoD

2015 - 2018 Head of Division Forces Policy II, MoD since 2019, Director, Bundeswehr Office for Defence Planning, Berlin Operational experience

From – to Assignment

07/95 – 09/95 General Staff Officer, A4, German Air Force command post, Vicenza, IT

10/12 – 02/13 DCOS Support HQ RC N and Deputy Commander, 29th and 30th German contingents, ISAF, Mazar-e Sharif

Dr Andrea Gilli, Senior Researcher, NATO Defence College



Andrea is a Senior Researcher at the NATO Defense College, where he works on technological change and military innovation issues. In the past, Andrea has been a visiting and post-doctoral fellow at Johns Hopkins University and Columbia University, as well as Stanford University (where he remains an Affiliate) and Harvard University. Andrea has worked or conducted research for the U.S. Department of Defense, the Italian Air Force, the Italian Government, the Italian Ministry of Foreign Affairs, the Preparatory Commission for the Nuclear Test Ban Treaty Organization, the Royal United Services Institute, the European Union Institute for Security Studies and Metropolitan University Prague, among others.

Andrea is one of the few Europe-based scholars to have published in all the three most important academic journals on security issues, *International Security*, *Security Studies* and *Journals of Strategic Studies* and whose publications are assigned to the most important universities in the world, from Harvard to Stanford, Princeton to SciencePo, St. Andrews to ETH-Zurich. Andrea's research has been featured in the *Washington Post*, *Foreign Policy* and the *Economist* and has received multiple awards, including the 2015 European Defence Agency and Egmont Institute's biannual prize for the best dissertation on European defence, security and strategy and the 2020 best research article award on U.S. foreign policy and grand strategy as part of the America in the World Consortium.

A past consultant for leading private and public security and defence organizations, Andrea is a passionate public speaker who has briefed, among other things, the Italian Government, NATO HQ, NATO Allied Command Transformation, Georgetown University, Oxford University, the U.S. Naval War College, and the U.S. Department of Defense, among others. A first-generation college student, Andrea holds a B.A. in Politics and Economics from the University of Turin, an MSc in International Relations from the LSE and a PhD in Social and Political Science from the European University Institute. Andrea interned at the Research Division of the NATO Defense College for exactly ten years before returning as a Senior Researcher.

Brigadier General Sean Conroy, US Air Force Reserves/Microsoft



Brig Gen Sean F. Conroy is the Chief of Staff of the Louisiana Air National Guard. He is responsible for leading the LAANG headquarters staff as well as developing plans and publishing policies that support the field units.

Career highlights include three mobilizations in support of Operations NOBLE EAGLE, ENDURING FREEDOM, and IRAQI FREEDOM, serving in the combined air operations centers for First Air Force, Tyndall AFB, and CENTCOM, Al-Udeid Air Base, Qatar. In addition, he mobilized in response to Hurricanes Dennis, Katrina, Isaac, Laura, and Ida, serving as Jefferson Parish liaison officer, Staff Judge Advocate, commander of the Point of Distribution mission, and Senior Military Advisor. He has commanded three times, the 159th Mission Support Group, the 159th Security Forces Squadron, and the 113th Security Forces Squadron.

Sean Conroy holds a PhD in Political Science from the University of New Orleans, a law degree from St. John's University School of Law, and a Master's degree in public policy from Stonybrook University. He is an in-residence graduate of the Marine Corps Command and Staff College, the School of Advanced Air and Space Studies (SAASS) and the Air War College.

Mr Joe Villani, Vice President for Demonstrations and Prototypes, Lockheed Martin



Joseph (Joe) Villani has been appointed as the executive lead for the Demonstrations and Prototype (D&P) Program. He is responsible for showcasing the Joint All Domain Operations (JADO) capabilities and technologies to show that new architectures, CONOPS, technologies and Program of Record enhancements can make our existing products provide joint warfighting capabilities.

Prior to that he was the RMS System Engineering COE and EADGE-T Executive Program lead. Responsible for managing the System Engineering Center of Excellence (COE) which includes +4000 engineers dispersed over +30 geographic areas, both domestically and internationally, while supporting RMS annual sales exceeding \$8B. EADGE-T Program Executive responsible for directly managing the engineering and program teams, as well as the direct customer interface. Prior to this I was the C6ISR Chief Engineer for 9 years. Previous roles include the deputy for the New ventures LOB and the MS2 Capture Lead for the LCS FY08/09/10. While leading this Capture, he has additionally maintained the responsibility as a Deepwater Program director. As the Deepwater Program Director

for Lockheed Martin and its Integrated Coast Guard Systems (ICGS) joint venture, he was responsible for the Deepwater program coordination across the aviation, surface, C4ISR and logistics domains.

Prior to accepting the Program Director position, he was the chief engineer for the Coast Guard Systems line of business focused on enhancing Deepwater technical performance as well as working with commercial industry to support the homeland security market. His technical background includes extensive C4ISR fixed price and cost plus development experience for commercial and government customers.

From 2000 to 2003, Mr. Villani was the chief engineer for Aegis international programs responsible for development and delivery of the Aegis Weapon System to several European and Asian countries. At the same time, he was the technical director for the Norwegian New Frigate program responsible for the design, development, manufacture, integration and support of a \$600 million integrated weapon system under fixed price contract to Spanish shipbuilder Navantia and an FMS cost plus contract with the U.S. Navy.

Prior to this assignment, Mr. Villani was the technical director for the Spanish F-100 frigate program supporting the design and delivery of an Aegis Weapon System which included system definition to support more than five major indigenous systems. During this assignment, he also led an in-country technical team that supported the introduction of system engineering disciplines to Spanish industry. Mr. Villani served on active duty as a First Class Electronics Technician in the U.S. Navy for 10 years before joining Lockheed Martin in 1986. His final military assignment was to manage the communications and radar suites at the Combat System Engineering Development Site (CSEDS) in Moorestown, N.J.

Mr. Villani holds a computer science degree from Rutgers University and a master's degree in systems engineering from the University of Pennsylvania. He is married with two children.

Ms Ann Dailey, Non-resident Senior Fellow, Atlantic Council



Ann Marie Dailey is a nonresident senior fellow at the Transatlantic Security Initiative of the Atlantic Council's Scowcroft Center for Strategy and Security. She is a former senior advisor to the assistant secretary of Defense for international security affairs in the Office of the Under Secretary of Defense for Policy, and currently serves as a policy researcher at the RAND Corporation. She is a geopolitical strategist with deep expertise in Europe, Eurasia, and energy and climate resilience with two decades of study and experience in the public and private sectors. Previously, she served as senior advisor for Russia, Ukraine, and Eurasia in the Office of the Undersecretary of Defense.

She has a master's degree in international economics from the Johns Hopkins School of Advanced International Studies and a bachelor's degree in political science, international studies, and Russian and Eurasian studies from the University of Illinois. Dailey is also an engineer captain in the US Army Reserve.

Mr Rune Raunow, Vice President, Business Development, Systematic



Rune was born in 1971 and graduated with a master's in Computer Science from Aarhus University in 1998.

After university, Rune spent five years in international management consulting, working for PA Consulting with clients like Nokia Mobile Phones, Felixstowe Dock & Railway Company and Singapore Power.

In 2003, Rune joined Systematic in Copenhagen as Chief Consultant, working predominantly for Intelligence and Police customers in IT Architecture, IT Strategy and Change Management.

In 2010, Rune took responsibility for building a dedicated Intelligence and National Security business unit in Systematic. Over the next four years, this business unit grew into a strategic supplier of IT solutions to the Danish National Police, Danish Security Intelligence Service (PET) and other

classified customers.

In 2014, Rune stepped in to manage a turn-around of the struggling Consulting business unit within Systematic. Over three years, this resulted in a 500% growth in turnover and profit margins, with a significant boost in employee attraction, satisfaction and retention.

Following a short departure for a Client Executive position in NNIT, Rune returned to Systematic in 2018 as Vice President responsible for Business Development in the Nordic Defence market (incl. Baltics).

The Nordic Defence market is a significant "home market" to Systematic, with its mature technology users, high interoperability ambitions and a strong focus on value in expenditure. Rune manages a team across 4 Nordic locations to support and grow these unique relationships.

Rune is married to Hanne, a father of 2 and lives in Jonstrup, outside Copenhagen.

Lieutenant General Yngve Odlo, Commander, Norwegian Joint Operations HQ



POSITIONS

Starting with 2021 - Commander, Norwegian Joint Headquarters (Lieutenant General);
2015 - 2021 ACOS Operations Division, Norwegian Defence Staff (Major General);
2013 - 2015 Deputy Chief of Staff, Operations, Norwegian Joint Headquarters (Major General);
2012 - 2013 Chief of Staff, Regional Command North, ISAF, Afghanistan (Brigadier);
2010 - 2012 Commanding Officer, Norwegian Defence Center for Command and Control Information Systems (Brigadier);
2009 - 2010 Deputy ACOS Operations Division, Norwegian Defence Staff (Brigadier);
2007 - 2009 Head of Situation Center, Norwegian Defence Staff, Operations (Colonel);
2005 - 2007 Commander Brigade North (Colonel);
2004 - 2005 Commanding Officer NOR Battlegroup 3 (NOR BG3), Kabul Multinational Brigade, ISAF, Afghanistan (Lieutenant Colonel);
2002 - 04 Commander Armor Battalion, Brigade North (Lieutenant Colonel);

2000 - 2002 Staff Officer Army, Headquarters Defence (Lieutenant Colonel);
1998 - 2000 Section Chief Army Staff plan branch, Headquarters Defence (Major);
1996 - 1997 Staff Officer, Søndenfjeldske Cavalry Regiment (Major);
1993 - 1996 Instructor Land Warfare Center, Armor branch, Søndenfjeldske Cavalry Regiment Cavalry (Captain);
1992 - 1993 Squadron Commander Armor Battalion, Brigade North (Cavalry Captain);
1991 - 1992 Second in Command Tank Squadron, Armor Battalion, Brigade North (Lieutenant);
1990 - 1991 Platoon leader tank Squadron, Armor Battalion, Brigade North (Lieutenant);
1988 - 1990 Head of Training Officer Candidate School, Søndenfjeldske Cavalry Regiment (Lieutenant).

MILITARY EDUCATION

2009 Norwegian Defence University College
2007 - 2008 U.S. Army War College, USA
1998 - 1999 Norwegian Defence Command and Staff College
1995 - 1996 Norwegian Army Command and Staff College
1985 - 1988 Army Military Academy
1981 - 1982 Officer Candidate School, Søndenfjeldske Cavalry Regiment

DECORATIONS

2018 Defence Service Medal with Laurel Branch
2018 Defence Service Medal with two stars
2013 Defence Operation Medal - Afghanistan (x2)
2012 NATO Non-article 5 Medal - Afghanistan
2007 Defence Operation Medal
2005 Armed Forces Medal for International Operations
1982 National Service Medal - Army

BIO

Lieutenant General Yngve Odlo is born in Ringeby, and lives, with his wife and children, at Jessheim outside Oslo. Outside work, he enjoys running, walking and skiing, and spending time at their family cabin in the mountain.

Major General Vincent Breton, Director of the French Joint Concept and Doctrine Center



- Born on 20 May 1968 in Auchel (62)
- Married – 4 children
- 1989 class of the Air Academy
- Patented transport pilot in May 1993
- 6,500 flying hours (including 378 hours over hostile areas and 132 war missions)

Since 2022 Director of the Joint Centre for Concepts, Doctrine and Experimentation;

2019-2022 Joint Staff PARIS: Prospective general officer and military strategy;

Innovation General Officer (2019-2020); Sustainable Development General Officer (2019-2021);

2017-2019 Air general staff PARIS: deputy of the assistant chief of staff “activity”. General officer for overseas territories and foreign relations. Air Innovation 2022 project manager;

Operation Chammal / Inherent Resolve (7 months in 2018-2019): French component commander and FR representative to US AFCENT and the Combined Air and Space Operation Center of Al Udeid (Qatar);

2015-2017 EVREUX: Commander of Air Base 105 and Defence Base, Departmental Military Delegate of Eure;

2015 UNITED KINGDOM: Higher Command and Staff Course (HCSC) 2015, Student; 2014-2015 CHEM - IHEDN PARIS: Auditor of the 64th session of the CHEM and the 67th session of the IHEDN;

2011-2014 BRUSSELS: Head of the «capabilities» section of the French military representation to the EU;

2008-2011 Joint Staff PARIS: Assistant Chief of Staff of the French Chief of Defence (General Georgelin then Admiral Guillaud);

2004-2008 Air Base 110 CREIL: Deputy commander then commander of the ET 03/60 Squadron Esterel (Airbus 310 and 340);

2003-2004 ITALY: student from the Italian joint staff college (Rome);

2001-2003 Air general staff PARIS: Section head for programmes management of the studies and planning branch;

1997-2001 Air Base 110 CREIL: Airbus 310 pilot - head of the air activity section of the ET 03/60 Squadron Esterel;

1993-1997 Air Base 123 ORLEANS: pilot C160 Transall then assistant to the chief of operations of ET 03/61 squadron Poitou;

DEPLOYMENTS:

2018-2019 (7 months): Operation Chammal - COMELEF with US AFCENT and Al Udeid CAOC (Qatar).

Dr Jeffrey M. Reilly, Chair of the Department of Joint Education, Air Command and Staff College



Dr. Reilly is a retired Army officer with 26 years of active-duty service. He began his military career as an infantryman in Vietnam. His operational expertise includes serving as a theater-level combined and joint operations officer, plans division chief, and member of the Secretary of Defense’s “two major theater war” plans team. He has been an adjunct faculty member for the NATO School’s Operational Planning Course, a speaker at the USAF Weapons Instructor

Course, and a member of the Chairman of the Joint Chiefs of Staff’s Military Education Coordination Council Working Group. Dr. Reilly has also given a number of presentations on multi domain operations at international defense colleges including: the Führungsakademie der

Bundeswehr, in Hamburg, Germany; the Royal Danish Defence College in Copenhagen, Denmark; the Ethiopian Defense Staff College in Addis Ababa; the Polish War Studies University in Warsaw, Poland; and the Indian Army Center for Land Warfare Studies. Additionally, he conducted research on

design in Afghanistan during 2010, 2011, and 2012 and on the future of C4ISR in Iraq and Africa during 2016. His publications include

Operational Design: Distilling Clarity from Complexity for Decisive Action and he is a co-founder of the Over the Horizon digital journal. In 2018, Dr. Reilly won the Air Education and Training Command (AETC) award for innovation in multi domain operations and the Secretary of the US Air Force top award for outstanding civilian leadership. Dr. Reilly currently serves as Director of Joint Education at the Air Command and Staff College and as the Director of the college’s Joint All Domain Strategist (JADS) concentration.

Rear Admiral Ignacio Cuartero Lorenzo, Director of the Concepts and Capabilities Directorate, The EU Military Staff



Radm Ignacio Cuartero Lorenzo was born in Ferrol in May 1967. He followed the family tradition and joined the Spanish Naval Academy in 1986. He was promoted Lieutenant JG in 1991.

As Lt, he specialized as Electronic Warfare and Tactical Action Officer and served at sea onboard a wide range of surface combatants, from minesweepers to frigates and amphibious ships. He also served in NATO HRF-M (MCC) onboard Spanish LPD “Castilla”.

As LtCDR he commanded an Offshore Patrol Vessel based in the Canary Islands and deployed to the North Atlantic Fisheries.

As CDR he commanded the AEGIS frigate F-105 “Cristóbal Colón”. During his tour in command he deployed to the USA for the “Combat System Ship Qualification Trials” (CS-SQT) in the summer 2016 and to Australia as part of the MOU between Armada and the Royal Australian Navy from January to June 2017.

From July 2018 to July 2021, as Captain, he was the Commanding Officer and Superintendent of the Spanish Naval Academy.

Ashore assignments also include the NATO Naval HQ’s in Naples (Italy), the Spanish Navy HQ’s (Strategic Planning Directorate), the MOD as Technical Advisor to the Minister, and temporary duties at the US EUCOM HQ’s (2004) as part of the Operation Enduring Freedom Staff; at the Spanish Embassy in Lebanon (2006) during the deployment of the Spanish reinforcement to UNIFIL; and at the EUNAVFOR ATALANTA Operation HQ’s (2009) in Northwood (UK).

In October 2022 was promoted to flag officer and assumed duties as Head of Navy Communications and Information Systems in Madrid.

In December 2022 was selected by the European Union Military Committee as the next Director of Concepts and Capabilities within the European Union Military Staff in Brussels, from summer 2023.

Radm. Cuartero is a graduate from the NATO Defense College in Rome, the US Naval War College (College of Distance Education, 2004 Command and Staff Diploma) and the Spanish Joint Staff College. He has also attended national senior courses on Logistics and Strategic Communications. He obtained a Bachelor Degree in Economics and has attended Executive Education Courses in Leadership both at the Harvard University Kennedy School of Government and at the University of Navarra Business School (IESE). He speaks English, French and Italian.

Dr Ian Bowers, Associate Professor, Royal Danish Defence College



Ian Bowers is an Associate Professor at the Centre for Joint Operations at the Royal Danish Defense College. He is also the lead researcher on the RDDC’s multi-domain operations project. Prior to holding this position, he was an Associate Professor at the Norwegian Institute for Defense Studies. His research focuses on multi-domain operations deterrence, sea power and East Asian security. His research has been published in a number of leading international journals including International Security, The Journal of Strategic Studies and The Naval War College Review.

Dr Olivera Injac, former Minister of Defence of Montenegro



WORK EXPERIENCE

2023 – Mayor of Podgorica - Municipality Podgorica, Montenegro;
2020 – 2022 Minister of Defence – Government of Montenegro, Podgorica;
2011 – 2020 Associate Professor – Faculty of Humanistic Studies, University of Donja Gorica;
2008 – 2011 Teaching Assistant – Faculty of Humanistic Studies, University of Donja Gorica;
2000 – 2008 Analyst, Strategic Planner and Advisor for International Relations– Ministry of Interior of Montenegro.

EDUCATION AND TRAINING

2011 – PhD in Political Science, Faculty of Political Science, University of Montenegro “Cultural Aspects of International Security”.
2006 – Master of Political Science, Faculty of Political Science, University of Montenegro, “Sociological aspects of the terrorism in Europe”.
1999 – Faculty of Philosophy, Faculty of Philosophy, University of Montenegro.

Since 2006 finished specialized trainings in the field of international relations and security in “George Marshall Center for International and Security Studies” in GarmischPartenkirchen, Germany (Advanced Security Studies 2007/1, Senior Executive Seminar on Migration and International Security 2008 Security in the SEE 2011) and Defence Institute of Legal Studies in Newport, Rhode Island, USA (Legal Aspects of Combating Terrorism in 2008), and other relevant institutions.

PARTICIPATIONS IN ORGANISATIONS:

- Vice President of the Montenegrin Alumni Association of George Marshall Centre (2012-present)
- Board Member Atlantic Council of Montenegro (2011-2017)
- Member of the Editorial Committee of scientific journal of the Ministry of Defence of Slovenia “Contemporary Military Challenges” (2016-present)
- Member of the Editorial Committee of scientific journal of the Ministry of Defence of Macedonia “Contemporary Macedonian Defence” (2018)

PROJECTS:

- 2012-2015 “National Project Euro-Atlantic Integrations of Montenegro”;
- 2014-2015 “TEMPUS Project Enhancement of cyber educational system of Montenegro”;
- 2020 - “Strengthening industry 4.0 by semantically enhanced cyber security”.

LECTURING

In addition to permanent employment at the University of Donja Gorica (2008-2020), as a guest lecturer has been engaged for other institutions:

2016-2017 – Faculty for the Public and European Studies, Kranj, Slovenia;
2016-2018 – Faculty of Law, University of Montenegro;
2016-2017 and 2015-2016 – Diplomatic Academy - Ministry of Foreign Affairs, Government of Montenegro.

CONSULTANCY AND EXPERTS ARRANGEMENTS

- Local Consultant for drafting “Police Strategy and Action Plan”, contracted by OSCE Mission in Montenegro (April 2020-)
- Researcher on the regional WB project of the George Marshal Center (Germany) – “BALKAN 360” (January 2020 -)
- Member of the Team for preparation of the strategic document of Government of MNE “National space plan till 2040”, responsible for the area “defence, protection and safety” (January 2020 -)
- Member of the Working Group for implementation of the Law on determination and protection of critical infrastructure of Montenegro (March 2020 -)

PUBLIC SPEAKING

- More than seventy public presentations and introductory speeches at conferences, workshops and trainings in Montenegro and abroad, and most of all in the WB region, including RACVIAC Center.

Rear Admiral Placido Torresi, Deputy Chief of Staff for Joint Force Development, HQ SACT



Rear Admiral Placido TORRESI is native of Bari (Jan 13 1968). He graduated from the Italian Naval Academy in 1990, with the rank of Ensign.

From 1990 to 1992 he attended the US NAVY flight schools in Pensacola (Florida) and Corpus Christi (Texas), where he got his wings as naval aviator for aircraft (December 1991) and helicopters (July 1992).

Back to Italy, he served as Air Operations Officer of the 1st Helicopter Squadron in NAS Luni and afterwards he reported on board the ITN Aircraft Carrier ITS GARIBALDI as Air Operations and Training Officer.

From September 1998 to September 1999 he was appointed Commanding Officer of the Patrolling Vessel ITS SPICA, mostly engaged in Fisheries Patrol Operations in the Mediterranean Sea.

His first tour as Staff Officer was at the “Studies and New Programmes” Office at the Naval Aviation Department of the Italian Navy General Staff in Rome (Sept. 1999 – Dec 2002), where he became the NH-90 Helicopter Project Manager.

At the end of this tour, he served in France at the NAHEMA NATO Agency for the management of the NH-90 Helicopter programme, being responsible, from 2003 until 2005, of the “Mission system and Weaponry” section. In July 2004 he was promoted to the rank of Commander.

During his second staff assignment at the Naval Aviation Department of the Italian Navy General Staff in Rome

(Jan. 2006 – Jul. 2007), he was appointed as project manager for the JSF (Joint Strike Fighter) programme and, from August 2006 to February 2007, he attended the 109th Senior Course of the NATO Defense College in Rome.

From July 2007 to September 2008 he served as Commanding Officer of the AntiSubmarine Frigate ITS ZEFFIRO.

From September 2008 to October 2012, he reported again to the Naval Aviation Department of the Italian Navy General Staff in Rome to become Chief of the “Studies and New Programmes” Office. Later, from October 2012 to September 2013, he was appointed Deputy Chief of the Naval Aviation Department of the Italian Navy General Staff. From October 2013 to July 2015 he reported on board the aircraft Carrier ITS GARIBALDI as Commanding Officer and between July 2015 and June 2016 he served as Commanding Officer of NAS Grottaglie (MARISTAER).

From June 2016 to September 2017, he served as Commander of the Italian Navy First Naval Division (COMDINAV UNO) in La Spezia Naval Base and promoted to the rank of Rear Admiral as of 01 July 2016.

He was appointed Task Group 425 Commander for the single service national operation “MARE SICURO”, from September to October 2016 and, again, from June to August 2017.

From October 2017 to July 2021, he became the Chief of the Italian Naval Aviation, serving as Director of the Naval Aviation Department (Italian Navy General Staff) and Commander of the Italian Fleet Air Arm.

From September 2021 to September 2022 he served as commander of MIASIT, the Italian assistance and support mission in Libya before he was appointed as Deputy Chief of Staff Joint Force Development at NATO Headquarters Supreme Allied Commander Transformation in Norfolk, VA Virginia (USA).

Rear Admiral TORRESI has a bachelor degree in “Maritime and Naval Sciences” from Pisa University.

During his career, he flew about 1600 flight hours on-board T-34 and T-44 aircrafts and TH-57, SH-3D, AB-212, SH-90A and MH-90A helicopters, with 338 successful deck landings, of which 130 at night.

Rear Admiral TORRESI is married and he has two sons.

Major General Flemming Mathiasen, Commander of Royal Danish Defence College



Major General Flemming Mathiasen was born in 1965 in Viborg, Denmark. He entered the Royal Danish Military Academy in 1985 and graduated as First Lieutenant in 1988. His first assignment was as a Tank Platoon Commander and Second in Command in a Tank Squadron at the Prince Life's Regiment.

Flemming Mathiasen was promoted to Captain in 1993. He went on his first deployment to Sarajevo in 1994 as Second in Command of the Headquarters Company at the UN Headquarters in Bosnia-Herzegovina. He was deployed on his second tour to Bosnia-Herzegovina in 1996-97 as Tank Squadron Commander in the Danish Battalion in Doboj. Furthermore, he served as an Operations Officer at Battalion and Brigade level.

1999, following the General Staff Course, he was promoted to Major and assigned as Head of the Captains Course at the Royal Danish Military Academy, Teacher in Land

Operations and Head of Current Operations in the Operations Center in the Danish Division Headquarters. Assigned to Defence Command, he served as Staff Officer at the Operations Staff and was Head of Section in the Operations Department in the Ministry of Defence. Flemming Mathiasen's staff service was followed by studies at the U.S. Army War College in Carlisle, Pennsylvania, from 2005 to 2006.

After graduating from U.S. Army War College, Lieutenant Colonel Flemming Mathiasen was assigned to the Chief Planning Branch in Army Operational Command. Subsequently, he was appointed Battalion Commander in 2008, initially commanding The Royal Life Guards' II Battalion and later I Battalion. He commanded until 2010, including a deployment to Afghanistan as Commanding Officer of the Danish-led battle group in Helmand Province.

Flemming Mathiasen was promoted to Colonel in 2010 and assigned command of the Danish International Logistic Center with responsibility for operational support to deployments and Logistic sustainability.

In 2013, he returned to the Defence Command as Head of the Executive Office, serving as the Danish Chief of Defence.

On the 15th of June 2015, Flemming Mathiasen was promoted to Major General and took command of the Danish Division in Haderslev and Karup.

On the 8th of March 2019, the Danish Division was transformed into a multinational NATO Division and was inaugurated as Multinational Division North with headquarters in Karup, Denmark and Adazi, Latvia. Multinational Division North passed the Headquarter's first NATO Combat Readiness Evaluation in March 2023, and Flemming Mathiasen Commanded the Division until August 2023. On the 1st of September 2023, Flemming Mathiasen was assigned as Commandant of the Royal Danish Defence College.

Major General Flemming Mathiasen has been awarded the Commander's Cross of the Order of Dannebrog, 25 years of Meritorious Service in the Army Medal, Danish Defence Medal for International Service 1948 – 2009, Danish Defence Medal for International Service, Danish Defence Medal for Deployment to Latvia, Danish Home Guard's Medal of Merit, Commander 1st Class of the Viesturs Order (Latvia), the Latvian Ministry of Defence's Medal of Merit 1st Class (Latvia), the Latvian Chief of Defence Medal of Merit (Latvia), the Latvian Army's Medal of Merit (Latvia), United Nations Protection Force in Former Yugoslavia Medal, UN Peace Price Medal, NATO Medal IFOR (Bosnia - Herzegovina), NATO Medal ISAF (Afghanistan) and the KNBLO Nijmegen (The Netherlands).

Flemming Mathiasen is married to Annette, and they have three sons together. He enjoys travelling with his family, sports and studying military history in his spare time.

Dr Sarah Chapman Trim, Head of People and Culture, UK StratCom Transformation Programme



A former Standing Joint Force HQ Non-Executive Director, Sarah Chapman Trim is Head of People and Culture, UKStratCom Transformation Programme, Senior Research Fellow at the Centre for Army Leadership and a Fellow of the British Psychological Society and the Chartered Management Institute.

After commencing her career as an academic and a statistical consultant, Sarah became a deep specialist, keynote speaker and published author in the science of human behaviour, leadership and culture change. She has worked alongside a diverse and challenging stakeholder network within the Australian and British Armed Forces and strategic partners and allies, successfully influencing and working collaboratively with senior leaders to deliver long-term strategic change in personnel policy, leadership, organisational culture and performance optimisation, including culture change initiatives for military personnel in Isolated, Confined and Extreme (ICE) environments. As a Military Psychologist in the Royal Australian Navy (RAN), her military specialisation was performance

optimisation of individuals and groups in Isolated, Confined and Extreme (ICE) environments.

She led and authored the review of the integration of women in to the RAN submarine service for the Chief of Navy and the Australian Parliament, the first dedicated Submarine Psychologist to serve in uniform in any naval force. She also served during Gulf War II as Maritime Task Group Psychologist, the first RAN Psychologist to deploy to a theatre of operations and be appointed sub-unit Command. She successfully delivered a fully operational psychology and mental health service to 600 RAN personnel, allies and Command whilst in theatre in response to an Australian Government mandate for the provision of mental health and critical incident support during the conflict. Her post-deployment report to Maritime Commander Australia and the Australian Parliament transformed conversations, training and support for the provision of mental health services to deployed personnel in the Australian Defence Force and was the genesis of a more comprehensive, 'whole spectrum' system of mental health support for serving personnel, veterans and civilians who are first responders or involved in managing national crises and emergencies.

Sarah also holds a Master of Business Administration (double major in Project Management and Human Resource Management) and a Master of Arts (International Relations) from the University of Exeter. Her thesis on the Responsibility to Protect (R2P), the international norm that seeks to ensure the international system acts to halt mass atrocities, genocide, war crimes, ethnic cleansing and crimes against humanity, was supervised by Professor Tim J. Dunne.

Whilst submarines remain her first love, Sarah now proudly serves in the Royal Auxiliary Air Force, focusing on decision-making, culture and behaviour change in complex systems, leadership and high-performing teams. She is a military spouse and the devoted mother of two allegedly delightful children. In her spare time, she enjoys learning French and German and is studying part-time at the Harvard Kennedy School of Government.

Brigadier General Mark Lobel, Assistant Chief of Staff for Strategic Development of Forces, SHAPE



Born in 1968, from a French father and a Swedish mother, Marc LOBEL was raised in Spain. He joined a military school in France in 1983, and then attended the French Officers' Academy in Saint-Cyr to graduate in 1993. Commissioned, he chose to serve in the infantry and joined the French Foreign Legion (FFL). Since then, he has been alternately assigned to combat units and staff positions, in the field of international relations, both in France and abroad. In 1994, after a year as a platoon leader in the FFL training regiment, he joined the 2REP (Parachute Regiment) in Corsica, and deployed several times to the Balkans and Africa as a platoon leader, XO and company commander.

In 2000 he was appointed to the Junior Staff School, first as a student and then as an operational English and staff techniques instructor for two years. Promoted to major he deployed for six months to NATO HQAFSOUTH Naples, as a desk officer for BiH and FYROM in the POLAD office, working for the CINC UFC) in the framework of the Balkan crisis. He was dual-hatted as DPOLAD for EU operation CONCORDIA in FYROM and NATO/EU relations.

From 2003 to 2005 he attended the French Army Command and General Staff College in Paris, followed by the Spanish Joint Forces Staff College in Madrid for a year. From 2005 to 2007, he returned to Corsica as 2REP's chief of operations (S3), was promoted to LTC and conducted two operational deployments with his regiment to Chad and Ivory Coast.

BGR LOBEL's joint staff assignments continued at a strategic political-military level in the French Joint Staffs International relations division, as a desk officer for relations with Southern Europe, in charge of elaborating and conducting the bilateral cooperation with several allied Nations. He was particularly in charge of preparing and coordinating with all Defence entities and the Foreign Affairs, the Heads of State level summits in the area of defence and security.

Selected in 2009 as Military Assistant to the first French SACT, Gen Abrial, in ACT, Norfolk (USA), interacting daily with the political-military echelons, both across NATO and the EU, and within the US. In 2013, back from the US and after spending a year as a mentor in the French joint Forces Staff College, he became the CO of the 4RE, the FFL Training and Education Regiment, in southern France, specialized in training foreigners. He was then reassigned to ACT, as Director Commander's Action Group, working again directly for three different SACTs in four years, from 2015 to 2019. Back in Paris, he took over the UN branch in the Joint Staff for one year before becoming the Deputy Head of the Euro-Atlantic Division. This Division is responsible for the joint military international relations with NATO, UN, EU and all our bilateral partners in Europe, North America, the former Soviet area and Turkey. In 2022, he was selected for promotion to BGR and assigned to SHAPE, as the Assistant Chief of Staff Strategic Development of Forces. This Staff Division coordinate and assure the synchronization and cohesion of all issues related to the development, generation and readiness of NATO forces and force capabilities.

Having always evolved in a multinational environment, BGR LOBEL has developed a deep knowledge of both operational engagements and command/management functions, together with cross-functional multi-level and multi-cultural staff work at the interface with Nations and International Organisations at pol-mil level. He has also built a wide professional network, as well as an essential understanding of NATO, EU and UN working methods and procedures. He is a French and Spanish native speaker, fluent in English, and has a professional working proficiency in Italian, and a familiar proficiency in Swedish. Married to Valerie they have three children and four grandchildren. He enjoys running, reading, and has desperately been trying for years to learn to play the guitar.

Lieutenant General David Julazadeh, Deputy Chief of Staff for Capability Development, HQ SACT



Lt Gen Dave Julazadeh is the Deputy Chief of Staff, Capability Development, Headquarters Supreme Allied Command Transformation, Norfolk, Virginia. He is responsible for developing operational and strategic capability requirements on behalf of 31 North Atlantic Treaty Organization nations. Additionally, he serves as SACT's Innovation Representative, Air Domain cross-functional Champion, and Champion for NATO's Command and Control, Cooperative Cyber Defense and Joint Air Power Competence Centers of Excellence.

Lt Gen Julazadeh entered the U.S. Air Force in 1990 following graduation from Kansas University and commissioning through ROTC. He has served as an F-16 Instructor Pilot, Functional Check Flight Pilot, and Flight Examiner logging more than 2,500 flight hours including 600 combat hours during operations Provide Comfort, Deny Flight, Northern Watch, Allied Force, Freedom's Sentinel, and Resolute Support. He also participated in Operation Uphold Democracy while serving as an Air Liaison Officer with the 1st Ranger Battalion, 75th Ranger Regiment.

Lt Gen Julazadeh has served in Numbered Air Force, Major Command, Headquarters Air Force, Headquarters NATO, Headquarters U.S. Central Command, Headquarters U.S. European Command, and Office of the Secretary of Defense Staff positions. He has commanded at the flight, squadron, and twice at the wing level. Prior to his current assignment, Lt Gen Julazadeh served as Chief of Staff, Headquarters USEUCOM, Patch Barracks, Stuttgart, Germany.

Lt Gen Julazadeh's military schools include Air Command and Staff College, Air War College, NATO Defense College, Joint and Combined Warfighting School, Combined Forces Air Component Commander Course, Combined/Joint Forces Land Component Commander Course, and the NATO Senior Officer Policy Course.

His awards and decorations include Defense Superior Service Medal with three oak leaf clusters, Legion of Merit, Distinguished Flying Cross, Meritorious Service Medal with three oak leaf clusters, Air Medal with one silver and three oak leaf clusters, Afghanistan Campaign Medal, Kosovo Campaign Medal, and the NATO Medal.

Major General Jan Dam, Air Chief for Royal Danish Air Force



Major General Jan Dam assumed office as the Chief of the Air Force in 2021 and was subsequently appointed Major General. Before assuming this role, he served as the Chief of Staff for the Danish Air Command.

As the Chief of the Air Force, he is committed to representing the Air Force's unique DNA and promoting a broad understanding of airpower within the Danish Defence organisation. Major General Dam's leadership is characterised by a forward-looking and operational focus, with a strong focus on the welfare of individuals and the courage to do what is right, even when it is challenging. Major General Dam believes that this approach is key to maintaining the agility and professionalism for which the Air Force is renowned, as it moves into the future.

Major General Dam has had a long career in air operations and support in a joint perspective, both nationally and internationally, serving in various leadership roles at multiple levels. Major General Dam began his military career as a conscript in 1984 and later attended the Royal Danish Air Force Academy, where he was promoted to First Lieutenant in 1989. His first assignment was as an education officer in Squadron 662 at Skrydstrup Air Base. He subsequently held various leadership positions in organisations such as the Tactical Air Command and Fighter Wing Skrydstrup.

Major General Dam was promoted to Major in 1998 after attending the United States Air Force's Air Command and Staff College in 1997-1998. To add a national dimension to his qualifications, Major General Dam pursued further education in management and administration at the Royal Danish Defense College

Major General Dam subsequently served as Staff Officer at Joint Force Command Brunssum in the Netherlands (2000-2004), Chief of Staff at Fighter Wing Skrydstrup (2007-2010), Chief of Operations Departments at the Tactical Air Command (2012-2014), and the Joint Defence Command (2014-2015).

In 2015-2016, Major General Dam participated in Operation Inherent Resolve (OIR) as Chief of Staff and Head of Department in the Strategy and Planning Branch at the Coalition Strategy and Planning Group, USCENTCOM, Tampa.

In 2016, Jan Dam was promoted to Colonel and assumed the position as Chief of the Development Division in the Air Staff, followed by Deputy Chief from 2018-2019. Between 2019 and 2021, he served as the Chief of Staff in the newly established Air Command.

In 2019, Major General Dam was awarded the Danish Order of Chivalry Knight 1st Class of the Order of the Dannebrog.

Major General Dam was born in 1964 in Kolding. He is married to Pia and has three adult children.

Major General Joseph D'costa, Deputy Chief of Staff for Strategic Plans and Policy, HQ SACT



Major General Joseph D'costa is the Deputy Chief of Staff for Strategic Plans and Policies (DCOS SPP) at NATO Headquarters, Supreme Allied Command Transformation in Norfolk, VA.

He was commissioned as a Field Artillery Officer through the United States Military Academy in 1989.

Major General D'costa has served in numerous leadership and staff positions, including Fire Direction Officer, Platoon Leader, and Battalion Adjutant, 1-17 Field Artillery Battalion in Fort Sill, Oklahoma; Field Artillery OCT, Combat Arms Training Officer, Division Aide-de-Camp, Headquarters and Headquarters Detachment Commander, Division Retention and Recruitment Officer, and Division Headquarters Commandant, 75th Division in Houston, Texas; Effects Based Operations Officer, Operational Net Assessment Officer, Assistant Space Operations Officer, and Information Operations Officer at Standing Joint Force Headquarters, US Joint Forces Command in Norfolk, Virginia.

He was the Battalion Commander of the 1st Battalion, 378th Infantry Regiment, 98th Division; the Contemporary Operating Environment Chief of the 1st Brigade, 75th TDMC; and the Brigade Commander of the 2nd Brigade, Gulf Division, 75th Training Command.

He was the Assistant Chief of Staff, G3, 75th Training Command, and the United States Army Lead at the Defense Innovation Unit Experimental in Boston, MA.

He served as the Vice Director of J7-Reserve, Joint Force Development at the Office of the Joint Chiefs of Staff, Washington, D.C. He served as the Deputy Commanding General (Support) at 412th Theater Engineer Command in Vicksburg, MS and as the Deputy Commanding General (Sustainment) at Eighth United States Field Army in the Republic of Korea.

He has served in Operations Desert Shield, Desert Storm, Iraqi Freedom, and Enduring Freedom and supported the Hurricane Katrina and Pakistan Earthquake Relief Efforts.

Major General D'costa's military education includes US Army Airborne School, US Army Air Assault School, Field Artillery Officer Basic Course, Field Artillery Cannon Battery Course, Infantry Officer Advanced Course, Observer/Controller Course, Combined Arms and Services Staff School, Command and General Staff College,

US Army Space Operations Officer Qualification Course, Effects Based Operations and Operational Net Assessment Course, Joint Professional Military Education II Course, US Army Information Operations Officer Qualification Course, the United States Army War College, and the Joint Flag Officer Warfighting Course (JFOWC).

Major General D'costa's decorations include the Defense Superior Service Medal, Legion of Merit, Bronze Star Medal, Defense Meritorious Service Medal, Meritorious Service Medal (9OLC), Joint Service Commendation Medal, Army Commendation Medal (5OLC), Joint Achievement Medal, Army Achievement Medal, Army Reserve Components Achievement Medal (6OLC), National Defense Service Medal with bronze star, Southwest Asia Service Ribbon with three campaign stars, Afghanistan Campaign Medal with campaign star, Iraq Campaign Medal with campaign star, GWOT Expeditionary Medal, GWOT Service Medal, Korea Defense Service Medal, Armed Forces Medal, Humanitarian Service Medal (1OLC), Military Outstanding Volunteer Service Medal, Armed Forces Reserve Medal with Hour Glass and 2 Mdevice, Army Service Ribbon (Numeral 2), Army Reserve Component Overseas Training Ribbon (Numeral 9), Cheon-su Medal (Republic of Korea) NATO Medal (ISAF), Liberation of Kuwait Medal (Saudi Arabia), Liberation of Kuwait Medal (Kuwait), Joint Meritorious Unit Award (4OLC), Army Superior Unit Award, US Army Parachutist Badge, US Army Air Assault Badge, British Army Parachutist Badge, USAF Space Badge, Joint Chiefs of Staff Identification Badge, the Orders of Saint Barbra and Saint Maurice (Legionnaire), Signal Corps Brevet Colonel, and a recipient of the Knowlton (Military Intelligence) medal.

