All-Domain Operations in a Combined Environment

1 Introduction

Joint All Domain Operations (JADO) is an evolution of the concept of Multi-Domain Operations (MDO). JADO incorporates the massive potential of a truly integrated force (the focus of MDO) and updates the concept by incorporating a few crucial aspects of how NATO aspires to conduct future operations. JADO shifts the focus from 'multi-domain', which individual services have been operating in for decades, and places it back on tackling the challenges of joint operations. Additionally, considering the entanglement of systems and interconnected capabilities spanning the domains in today's state-of-the-art militaries, it can be argued that our traditional structuring of services based on their principle operating domain may not be very useful in many future scenarios. It is likely the victor will emerge as the force able to manoeuvre easily in and through all domains in a synchronized manner at a speed which the opponent cannot match. With these considerations in mind, it is easy to conclude that placing too much weight on the domain reduces emphasis on the joint challenge of multiple services seamlessly working together across all domains.

The next essential addition that NATO JADO brings to MDO is that globally, the vast majority of militaries plan for and rely on their ability to conduct operations in a combined environment, as is certainly the case for allied nations. Building alliances has proven to be critical to successfully responding to a crisis in that it confers legitimacy on the effort while also increasing available forces and capabilities, reducing each nation's individual burden. However, responding multilaterally creates challenges across the entire spectrum of the effort, from planning through execution and evaluation. Common issues include: maintaining proper alignment of the coalition and national priorities, asymmetries in the allocated forces in terms of technology and capabilities, operating with shared (or at least interoperable) Tactics, Techniques, and Procedures (TTPs), ironing out national caveats, determining a sound structure for command and control, language barriers, and religious and cultural differences. Compounding the challenge, these obstacles can be even more difficult to quickly overcome when the coalition is required to coalesce and respond in a rapid manner due to an emerging crisis. Winston Churchill wrapped up these ideas nicely when he stated in 1945, 'There's at least one thing worse than fighting with allies,

and that's fighting without them.'[1] We must ensure that preparation for future NATO operations is strongly influenced by this reality.

In order to place emphasis on the challenging reality of operating jointly in a combined environment, the JAPCC has initiated a new expansive project entitled NATO JADO. 'NATO' gives the combined environment sufficient priority, whereas 'JADO' places emphasis on the problem of operating jointly, while also circumventing the structured ideas of domains, since it includes them all.

2 Definition

In order to help determine the appropriate topics for the project, an initial description of NATO JADO is proposed to encompass the perspectives from stakeholders across all domains (Land, Air, Maritime, Space and Cyberspace). As the project evolves, this initial definition will be evaluated and refined whenever possible to incorporate all domain and service perspectives.

NATO Joint All-Domain Operations: Actions taken by the joint forces of two or more NATO nations, comprised of all available domains, integrated in planning and synchronized in execution, at a pace sufficient to effectively accomplish the mission.

3 Aim

The aim of NATO JADO is to identify and propose solutions to the problems associated with fully utilizing the collective capabilities of all assets assigned to a NATO-led effort. This includes the rapid processing of data and management of intelligence, as well as the technical ability and policies required to enable efficient operations inclusive of all contributed assets, in order to create synergistic effects that cause multiple dilemmas across myriad contact points while outpacing an adversary's decision cycle.

4 Scope

The project will focus on what is achievable, not just aspirational, while keeping broad sight of the end goal. The scope includes critical nodes, desired capabilities, C2 and interoperability requirements, and perhaps most importantly, the training necessary to optimize the leadership model and promote Alliance-wide understanding. This project has many burgeoning synergies with initiatives in progress throughout national warfighting institutions and NATO organizations including the Bi-Strategic and Component Commands, Joint Analysis and Lessons Learned Centre, the Joint Warfare Centre, NATO Defence College, and other Centres of Excellence. Working closely with these partners, the project will help identify the requirements, capabilities, and training models which NATO should be developing now in order to move from our current state of interoperability to a level of seamless integration able to conduct NATO JADO within the next 10–20 years. In addition, as new technologies and concepts mature, NATO JADO will shift focus and contribute to the development of the most achievable and critical topics from the joint air and space power perspective.

5 Study Topics

NATO JADO topics have been created to coalesce capabilities and enablers that need to be addressed in order to further the progress of joint and combined operations. The study topics, explained next, have been developed to provide a framework from which specific work strands can be

selected based on the maturity of the subject and subject matter expertise available.

C2 Structure and Operational Planning Process. The current NATO Operations Planning Process (OPP) utilizes a comprehensive approach (including military, political and civilian considerations) during each stage of planning and has a generic understanding of domain capabilities and limitations. However, in order to properly support NATO JADO, the current planning processes and products may be inadequate. A revised, holistic approach to C2 based on all-domain ontology from planning to execution needs to be developed. The essential nature of the collection, fusion and distribution of all-domain information from across the force will be studied with an eye on identifying possible solutions, while leaving the structural reform proposals to the very end when JADO practices are more familiar and widely understood. This topic should consider questions such as how the OPP might contribute to providing authority allocation to the right level of leadership during execution, what level of detail is appropriate for Joint Headquarters plans, and are 'supported-supporting relationships' still an effective tool? In addition, the evaluation should look for improvements through the use of technologies such as Artificial Intelligence (AI) and Machine Learning (ML), which may be especially critical when considering the goal of connecting forces via complex C2 networks spanning all domains. Finally, joint operations centre processes need to be continually evaluated to incorporate new technology and propagate solutions across the Alliance, to include the fresh consideration of the usage of liaisons.

Intelligence and Situational Awareness. The collection and data processing methods, along with sharing of the resulting intelligence between services and nations, across all levels of leadership, must be modernized. The goal is to help create advantages in information, awareness, and decision. This topic will look to determine, at a high level, how to eliminate current roadblocks in critical information sharing within the Alliance, both in terms of policy and classification constraints. Focus will also be given to how best to utilize next-generation collection systems in combination with emerging and resilient large bandwidth data links. How will this real-time data be turned into actionable intelligence/decision-making materials? How can AI, ML, Deep Learning, Quantum Computing, Cloud Computing, and Big Data contribute?

Capability Advances. This topic will address capabilities stemming from new technology and new uses of existing technology, in addition to recommending areas of further development that could provide an increased level of connectivity and a wider arsenal of all-domain weapons to the Joint Force Commander. The effort will focus on providing solutions to current and future problems through maintaining strong connective tissue between the warfighter and advancing technology, including throughout the development of the advanced system or process. This topic will consider major categories of kinetic and non-kinetic effects including electromagnetic operations, cyberspace actions, and the denial of data, products, and services provided by space-based assets. In addition, it will consider how next-generation platforms (manned and unmanned) may be used to execute missions where real-time C2 is reduced or unavailable, such as in Emission Controlled (EMCON) environments.

Targeting. This topic is included to address how best to modernize the targeting process in a NATO JADO environment to enable decision-cycle advantage. Overarching

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questions will be discussed such as how the targeting process will function and how new network-enabled weapons will improve the kill chain elements (find/fix/track and engage). Does it still fit within the current constructs of Campaign Strategy – Air Strategy – Integrated Tasking Order (ITO) production? Also, considerations for the use of AI and ML to provide weapon/target pairings during pre-planned and dynamic targeting situations, and how these tools may lead to the implementation of more advantageous Rules of Engagements will be addressed. Finally, as autonomous systems continue to develop worldwide in terms of capability and reliability, their use to provide joint effects, including deadly force, will need to be continually assessed.

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Leadership, Education, and Training. One of the most challenging aspects of conducting operations in a NATO JADO environment will be developing leaders and operators able to deliberate and make decisions in a revolutionary way. NATO JADO alludes to an exponential increase in the traditional breadth and cross-domain harmony of decisions being made, and actions taken, in a synchronized manner over an expansive and everchanging battlespace. To enable the ability to consider all-domain effects and manoeuvre in and through all domains will require historic innovation in terms of training and education. The training and education plan will not only be innovative in and of itself, but the update process to the curriculum and flexibility in the training syllabi will require equally novel solutions. The future leadership, education, and training plans will need to incorporate these extremely challenging aspects of combined, joint all-domain warfare. Working with agencies conducting similar scoped projects, this topic endeavours to help these critical concepts advance.

6 Commonalities with the NWCC

NATO JADO has many synergies with the NATO Warfighting Capstone Concept (NWCC), which is governed by Allied Command Transformation (ACT)[2]. NATO JADO will contribute to the NWCC in many areas, including the Warfare Development Imperatives of 'Cross-Domain Command', 'Integrated Multi-Domain Defence', 'Cognitive Superiority', and 'Influence and Power Projection'.

7 Conclusion

We believe the ability of NATO forces to be seamlessly interoperable, complementary, and harmonized will be required in order to prevail against our potential future adversaries. This is the panacea of coalition warfighting, and is the lofty goal of this, and many other efforts occurring throughout national and NATO-affiliated organizations. Even considering the rapid advance of technology and capabilities across nations within the Alliance, all of the historical obstacles associated with multilateral operations remain, and will surely hinder the effectiveness of future Allied efforts if not addressed. The focus of NATO JADO is to eliminate or reduce future obstacles which could prevent NATO from being able to tap into capabilities across the entire spectrum of current and emerging systems that will be available in our militaries. We believe this is the most challenging military problem of our time, and we must act collectively to solve it. Collaboration across NATO organizations and national militaries, between senior leaders, and among education systems is the absolute key to optimizing future combined operations. Mobilizing our diverse set of joint SMEs, the JAPCC is well-positioned to collaborate, contribute, and help align priorities across the Alliance, enabling a more interoperable and effective all-domain fighting force.

1. Reid, W. (2008). Churchill 1940–1945, Under Friendly Fire. Publisher Birlinn.
2. NATO Allied Command Transformation 2020 Fact Sheet, 'NATO Warfighting Capstone Concept Experiments'.