

# If not command and control, then what?

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This concept information note is the last in a series of five being made available unedited to support DCDC's **command and control in the future** project. The information notes are designed to introduce the thinking and themes of the joint concept note that will publish in late 2024.

Concept  
information  
note 5

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1. To truly align with allies and effectively adhere to multi-domain operations (MDO), we must move away from the historical over-reliance on command and control (C2) as a term.
2. Future command and control is envisioned as a dynamic, collaborative system that encourages synchronisation and convergence among different entities. It prioritises unity and focus on the pursuit of common goals, leveraging emergent capabilities and coordinated efforts to optimally utilise resources and adapt to changing operating environments.
3. Up to now, the term C2 has been the default for militaries to label their command and control systems, a status quo that has remained unaltered despite numerous changes in the military environment. C2 has not only been overused and misused but also historically misunderstood. C2 is commonly misconstrued as a noun, rather than a verb. This creates the assumption that C2 is an idea or a construct, rather than an action which must be carried out in command and control structures.
4. Command and control researchers have for several years discussed the idea that utilising C2 as a descriptor for command and control is fundamentally flawed and an impediment to progress. Alberts<sup>1</sup> states that to explore approaches to command and control, we must avoid the use of terms which constrain our thinking to pre-agreed and accepted concepts, terms, and approaches. Despite research such as this, we are still bound to using C2 to describe command and control, which not only restricts our thinking but impacts our military operations.
5. This raises the question: if warfare has evolved beyond traditional command and control, and the very terms we use are inherently problematic, then why do we still call the operations we conduct C2? The focus of command and control is not C2, but rather an approach that incorporates complexity, multi-domain operations, and multilateral integration.
6. Instead of reverting to C2 as the default term for command and control, a new concept that encapsulates the future dynamic nature of military operations is required. This term is the "Operations Coordination Approach" (OCA). OCA draws upon systems thinking, NATO MDO<sup>2</sup>, UK and NATO Future Operating Environment (FOE), to formulate

1 Alberts, D.S. The Future of C2: Agility, Focus and Convergence, (Defense Technical Information Center, 2007.)

2 20230428-MCM-0004-2023-INV(MDO\_Concept)-NR.

an approach that provides greater situational and command awareness compared to C2.

7. The adoption of an Operations Coordination Approach (OCA), appropriate to the unique complexity, actors, and domains of a given situation, will allow greater agility, focus, and convergence and provide an overarching approach to the future of coordination and synchronisation of military effects. C2 should no longer be the phrase that encompasses everything. This is not to say C2 does not have its place within the OCA as an approach, but the use of the correct terminology is key to progress, especially when C2 has both negative connotations with PAGs and civilians and a defined legal meaning to those in the military.

8. Military operations are dependent upon the effective integration of PAGs and civilians. The term C2 creates a negative undertone between military and non-military actors because the right to command and control resources which are not one's own is inherently contentious and, usually, not possible. Phraseology that creates division between partners must, therefore, be changed and used as a mechanism to dismantle military hierarchical structures within MDO, which are not conducive to collaboration.

9. Utilising the term C2 within MDO is problematic because it gives military commanders a distorted view of their environment, especially what they have command and control over during an operation. C2 within MDO provides the false impression that all domains and actors are under military control, which impacts the commanders' situational awareness because they will not fully understand what they have command and control of.

10. C2 is especially problematic in terms of recognising and addressing complexity. Command and Control systems have varying degrees of complexity, ranging from clear to chaos. Each operation is unique and must be treated as such. C2 assumes that a commander has command and control of everything within a system, which restricts complexity to clear or complicated, excluding command and control situations that are complex or chaotic.<sup>3</sup> MDO is inherently complex due to challenges such as force integration and conflicting priorities. These challenges are complex and exist outside the existing C2 term.

11. C2 posits that a military commander can command and control all domains within a system (land, air, sea, cyber and electromagnetic, and space). However, as argued within this paper, this is a common and dangerous misconception, which impacts situational awareness and, in turn, operational ability. Within MDO, a commander will not have control over all domains, nor the ability to command all assets within those domains, because assets are provided by several allied nations in support of an overall mission. While a commander can influence another nation's thinking regarding the utilisation of assets, they cannot control these assets or mandate a specific action. If a commander can therefore only control their own assets, why is C2 used to describe this?

12. The OCA is particularly suited to address the complexities of MDO because it accounts for the bounded environment (C2) where commanders do have command

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<sup>3</sup> Snowden, D. J., & Boone, M. E. (2007). A leader's framework for decision making. *Harvard business review*, 85(11), 68.

and control while simultaneously acknowledging that outside of C2, there is an operating environment in which domains cannot be commanded or controlled. The OCA model used within this paper places cyber and electromagnetic, and space domains outside of traditional C2. Justification for this is provided under figure 2, but in short, these domain assets are often pooled, and one single Commander does not have full command over all of them or even any assets if owned by another nation or agency.

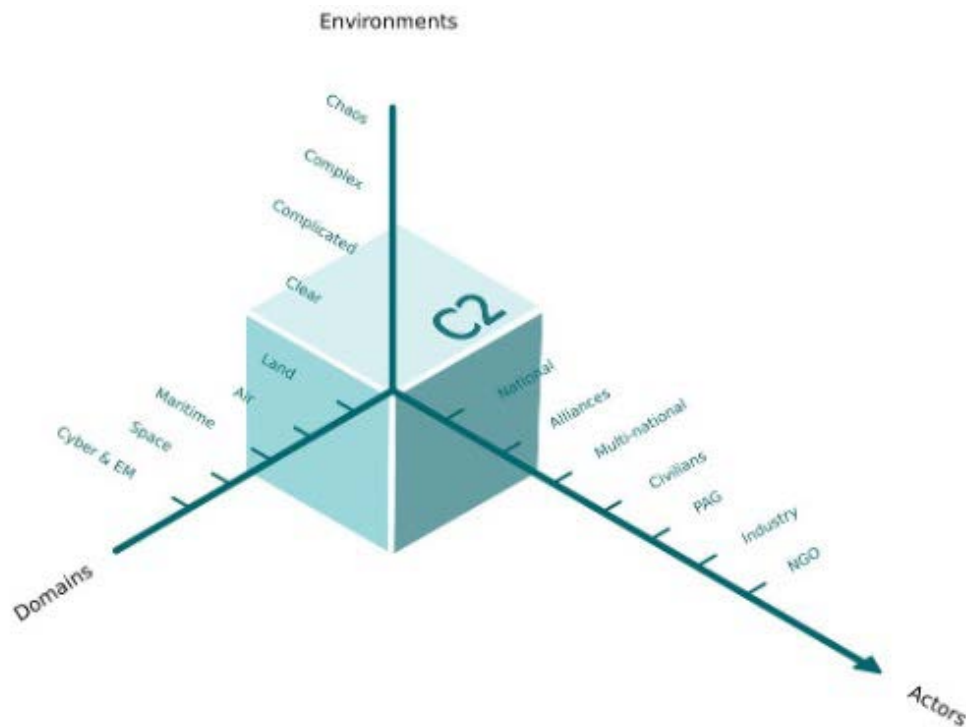
13. The over-reliance upon C2 as a term proves particularly troublesome within MDO when it comes to understanding partners involved in an operation. Modern warfare involves a range of military, civilian, government, and non-governmental partners, all of whom exist within a system that is fluid and has a high degree of complexity. OCA is particularly suited to address the complexities of multinational, multi-domain military operations, especially when dealing with diverse biases, non-military organisations, and collaboration with industry and academia. In such a complex environment, a flexible and collaborative leadership approach is crucial. The Operations Coordination Approach, with its emphasis on coordination, adaptability, and empowerment, aligns with the need to seamlessly integrate diverse entities. By incorporating non-military organisations, industry, and academia into the operational framework, military leaders can harness a broader range of expertise.

14. OCA acknowledges that successful operations require a blend of military, civilian, and academic insights, promoting effective communication and collaboration among these diverse stakeholders. The flexibility and adaptability inherent in the Operations Coordination Approach make it a suitable framework for navigating the complexities of multi-domain operations, encouraging a holistic and collaborative mindset, acknowledging the interconnected nature of modern challenges, and the need for a comprehensive, coordinated response.

## OCA modelling

15. The OCA is explained through a metaphor of a 3D cube, which represents the different dimensions of modern military operations. The three axes of the cube represent the operating environment, the actors involved, and the operational domains. This model is informed by the principles of MDO and the shortcomings in the traditional C2 term, which have been discussed throughout this paper.

16. Figure 1 is the encapsulation of C2 and the modern operating environment. Domains, Complexity, and Actors (axes) have all been discussed within this paper and outlined as the three pillars that underpin the Operations Coordination Approach. The cuboid represents traditional C2, a volume in which a commander COULD have command and control of a limited number of domains and actors and, importantly, only operates within Clear and Complicated environments. The lines extending beyond the cuboid represent the areas commanders do not have command or control, which, as outlined throughout this paper, cannot be described as C2.



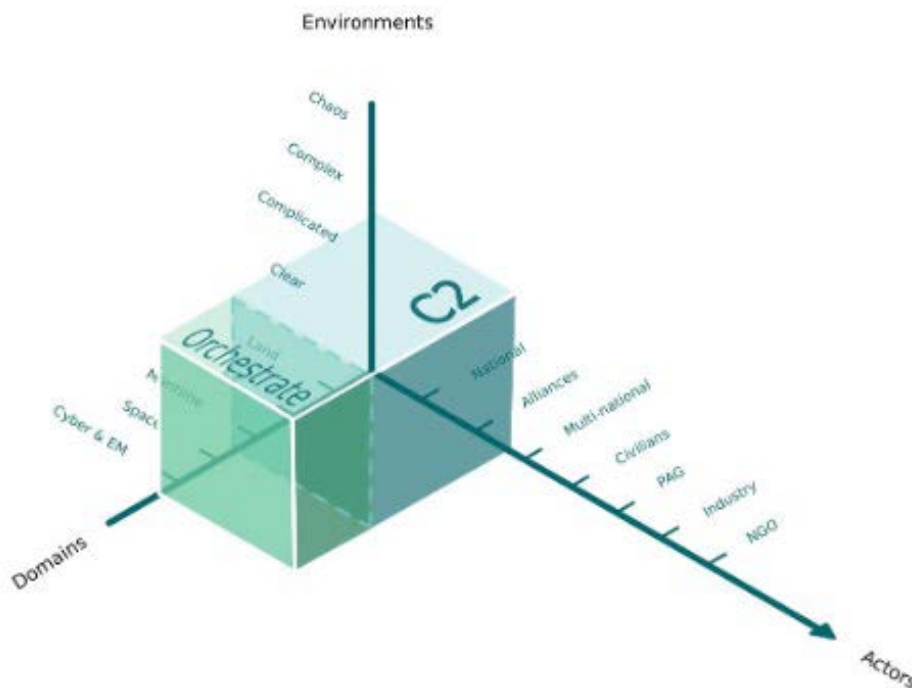
**Figure 1 - Operations Coordination Approach – Vickers-Hansson Model**

17. Within the confines of the cuboid, a commander is restricted to operating in either a Clear or Complex Environment, control of Land, Air, and Maritime Domains (traditionally these assets are owned by the military) and command over national and allied military forces. This is visualised by being placed within the C2 cuboid, this is the volume within which a commander retains and exercises command and control. Outside the cuboid is the operating context where a commander may not have Command or Control of either the assets in the other domains or of the other actors. They certainly cannot exert control in environments more complex than complicated; consequently, the traditional C2 term fails to encapsulate the situation.

18. The OCA incorporates the C2 cuboid and the axes outside of it, acknowledging that C2 still has a place within operations, but it is part of a wider approach. Within Domains, a commander does not have Command or Control over Space and Cyber assets, hence these lie on the axis outside the cuboid. Likewise, for Actors, a commander does not have the ability to Command or Control Civilians, PAG, Industry, and NGO, so they are outside of the C2 cuboid. The lines visualising the Domains and Actors axes, both extend beyond Cyber & EM and NGO, respectively, because these elements of the MDO continue to develop and, in the future, will develop beyond the model above. Actors' axes are not exhaustive, which is symbolised by the arrow at the end of the axis.

19. The Environment axis outlines the four levels of complexity within MDO. Operations under the traditional C2 term are capped at the complexity level Complicated. OCA acknowledges that MDO is inherently complex due to a multitude of factors and, therefore, there needs to be levels of complexity that include Complex and Chaotic. Operations are not restricted to one level of complexity; they exist within a volume that is continually shifting along the complexity scale in response to operational changes. Various strategies can be utilised to shift operations along the Environment axis, including Emergent Teaming, enablers, and technology. The OCA recognises that

new emerging technology will have a significant impact on the complexity of operations, which is why the axis should be viewed as a sliding scale, not a fixed point that cannot be changed.



**Figure 2 - Operations Coordination Approach – Vickers-Hansson Model**

20. Figure 2 builds upon Figure 1, through the addition of Orchestrate, as part of the Domains axis. Commanders do not have command and control over all domains, but by orchestrating their approaches with allies' commanders, they can exploit domains outside the traditional C2 boundary. This is a pivotal element of MDO, the ability of allies to share resources across domains to enable the desired operational effect. Orchestrate is central to the Coordination element of the OCA because it fills the void between 'command of' and 'ability to access' domains beyond those of one's own force(s). Orchestrate acknowledges that allies have varying approaches to the operations they conduct within each domain and the importance of cross-national, cross-domain coordination to achieve intended operational outcomes.

21. Figure 3 highlights the importance of collaboration within MDO and builds upon this paper's discussion surrounding the constraining nature of C2 when working with actors who, despite being at the core of our operations, are excluded from traditional C2 terms and approaches. The benefit of collaboration is multi-faceted, ranging from increasing a diversity of viewpoints by including PAGs in operations to understanding the policy and strategy motivations of allies more effectively.

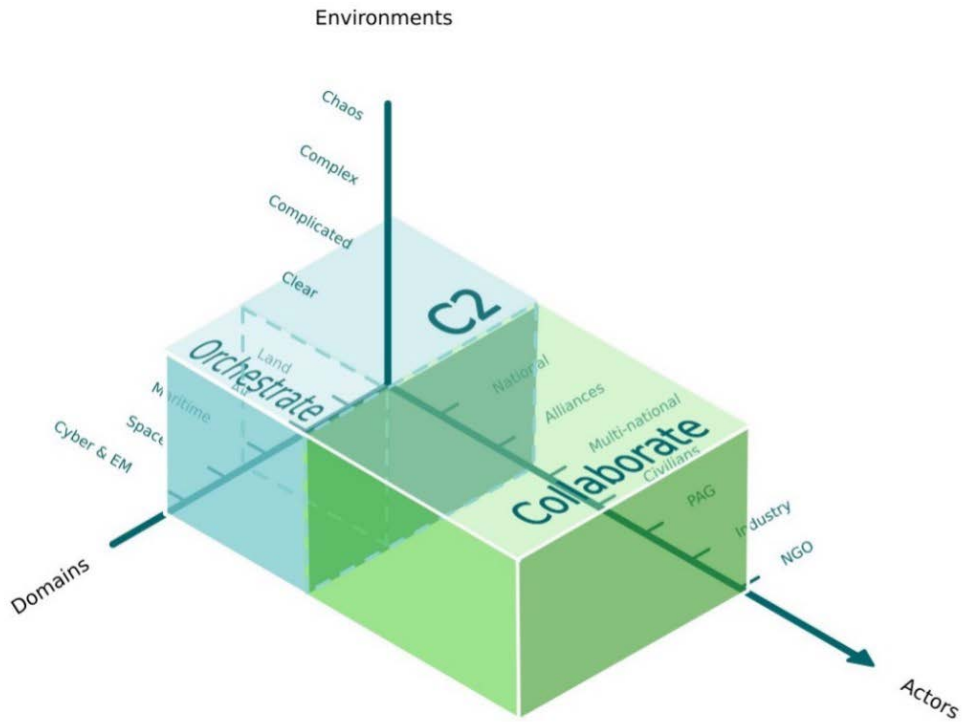


Figure 3 - Operations Coordination Approach – Vickers-Hansson Model

22. Within the OCA, Collaboration and Orchestration are intrinsically linked. Without Collaboration, a commander cannot effectively exploit the diversity of knowledge, skills, and experience within the operating environment. Similarly, Orchestration across Domains is dependent upon effective Collaboration and the ability of a commander to respect and acknowledge the agency of actors within the MDO.

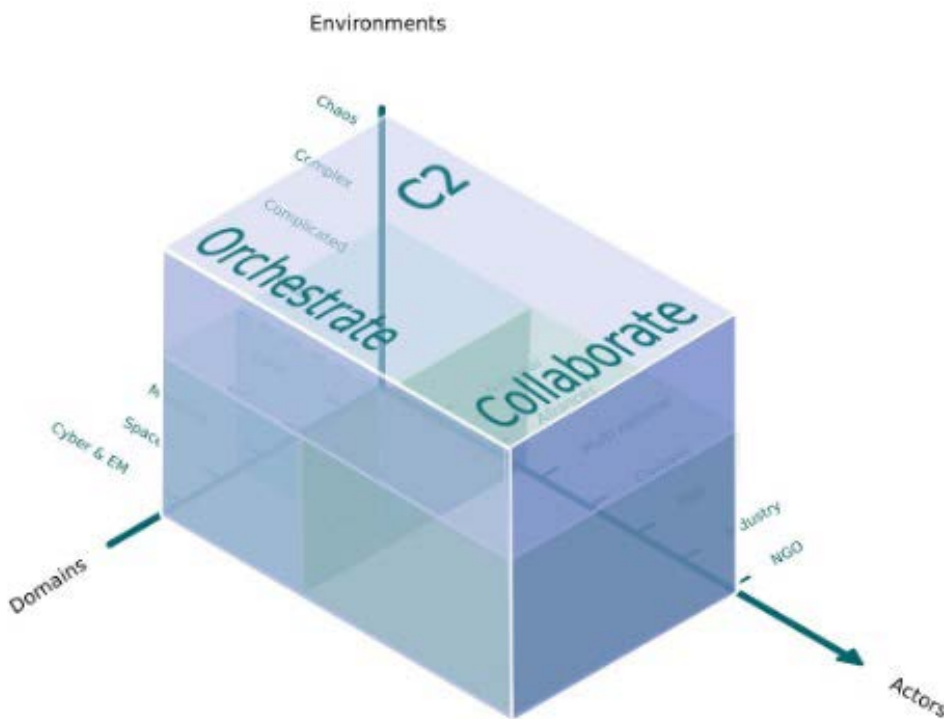


Figure 4 - Operations Coordination Approach – Vickers-Hansson Model

23. Figure 4 (the Vickers-Hansson Model) provides a visualisation of the overall OCA model, incorporating C2, Orchestration, Collaboration, Domains, Actors, and Environment. The OCA model recognises that C2 still has its place in less complex, national, military-only operations, hence it remains inside the wider OCA cuboid. However, in more complex environments, a different approach is needed, which is why the OCA not only incorporates C2 but the axes that are vital to MDO.

## People

24. The evolving nature of modern military operations and the continually increasing requirement to adopt MDO practices necessitate a shift in the skill sets required by commanders. Military training has historically focused on the instilment and development of 'hard' skills, which results in commanders being enthralled with warfighting, rather than possessing an understanding of complexity and systems-level decision-making. These qualities are fundamental to operational effectiveness within the modern operating environment.

25. NATO MDO has already outlined the impact of complexity, collaboration, and orchestration on military operations, but to equip commanders with a skillset to effectively understand these factors, there must be a radical change in training and the very commanders defence appoints to lead its operations.

26. Defence must equip its commanders with the 'soft' skills necessary to effectively operate within the modern operating environment, including systems thinking, collaboration, adaptability, and empathy. Without these skills, defence cannot produce military commanders who appreciate the complexities of MDO and, in turn defence will not be able to operate effectively against our adversaries.

27. How defence can overhaul its training system to equip its commanders with the necessary 'soft' skillset is rooted within the OCA. The OCA underscores the need to understand the levels and types of complexity, domains, and actors within military operations, the exact skillset a commander needs to operate effectively. Therefore, defence should focus on creating OCA 'Commanders', a cadre of individuals who have the soft skills and emotional intelligence required to thrive within modern military operations.

28. OCA 'Commanders' cannot be created overnight; it will require defence to invest time, money, and effort. However, failing to do so will result in our ability to operate being constrained. Training and nurturing OCA 'Commanders' is a continuous process, one which must start from initial training and continue throughout one's professional career. Crucially, OCA 'Commanders' must be trained alongside NATO partners, to ensure coherence in knowledge and to develop soft skills surrounding cultural understanding, which are vital for effective cross-nation collaboration.

## Summary

29. The term Operations Coordination Approach signals a departure from traditional command and control structures, emphasising orchestration, collaboration, and effective communication. It acknowledges the need for military leaders to embody new attributes like adaptability, collaboration, and decentralised decision-making through

empowerment. The focus is on coordination rather than strict control, allowing for greater flexibility in response to dynamic challenges. The ability to adapt and respond to changes dynamically is a pre-requisite of a resilient command and control system.

30. OCA provides a shift from the default C2 term to a more flexible, adaptive, and collaborative approach. The OCA model acknowledges that in complex, multi-domain, multi-national operations, military leaders need to adopt a more diplomatic, people-centric skill set. They need to be able to work effectively with a diverse range of partners, including civilians, industry, and academia, who cannot be commanded in the traditional military sense.

31. OCA underscores the system's agility, adaptability, and collaborative essence, emphasising its role in resource management and effort orchestration towards shared objectives. It aligns with the shift in military strategy towards emergent teaming in complex scenarios, reflecting the need for more cooperative and adaptive leadership. Importantly, the OCA provides a cogent visualisation of complexity, its impact upon traditional C2 and MDO, highlighting the significance of environmental factors within military operations.

32. The OCA highlights the need for defence to invest in education and training, and 'OCA Commanders' will also recognise that "knowledge, skills and experience" (KSE) is not an appropriate method to determine the skillset of personnel, because it does not acknowledge personal qualities, which are vital to effective MDO. Instead of KSE, 'OCA Commanders' would utilise the descriptor "knowledge, skills, experience and qualities" (KSEQ) to operate effectively within MDO.

33. Creating a cadre of OCA 'Commanders' will provide defence with people who understand the intricacies of complexity, collaboration, and orchestration and have the emotional intelligence and cultural understanding to harness people across the defence enterprise. Importantly, OCA 'Commanders' will understand that command and control do not exist when collaborating with industry, academic, and PAGs and that defence must adapt its rhetoric, oratory, and operational execution to reflect this. Overall, these commanders can be considered central to MDO and ensuring that defence is sufficiently diverse and fluid to adapt to the continually changing global military operating environment.

## Conclusion

The Operations Coordination Approach (OCA) is a significant departure from traditional command and control structures, addressing the challenges and complexities of modern military operations. By focusing on orchestration, coordination, collaboration, and adaptability, OCA provides a more flexible and resilient framework for managing multi-domain operations. This novel approach is essential for military effectiveness in a rapidly evolving global environment, where diverse stakeholders and complex challenges necessitate a more agile and responsive command structure.