

Education and Training Development:

Multi-Domain Operations

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Executive Summary

Technological advances and threats to our society require the DoD to adapt and prepare for future conflicts. According to the Air Force Chief of Staff, strengthening Multi-Domain and Command and Control (MDC2) is a focus area for our force moving forward; gaining superiority within each domain, while excelling independently will unite us as a force to achieve mutual goals (ECCT, 2017). Currently, Captains lack comprehensive understanding of Air Force warfighting capabilities and limitations, through and from Air, Space, Cyberspace, and sister services Land and Maritime, hindering development of operational-level C2 and exacerbating the service's deficiency producing joint leaders and teams.

Although several different options allow us to accomplish a cultural shift across the Air Force, education is the foundation of Air Force culture. The courses of action presented in this paper are based on changing a specific part of primary development education. Our proposal includes curriculum on Multi-Domains Operations (MDO) to educate tactical leaders and enable a continuum linked to future professional development. This Multi-Domain course would be in conjunction with SOS, using facilities and resources already available at Maxwell, AFB. As the intellectual center of the Air Force, course developers have several resources unique to Maxwell: AU headquarters, Air War College, the Lemay Center, and the Fairchild Research Information Center, all invaluable venues of information. Their proximity to one another would best shape a wide-reaching curriculum on one of the biggest challenges facing the AF of the future. SOS provides a focused environment for low-risk failures and rapid scalability, where the course can be modified as needed. This path is the least expensive, fastest to implement, and the most effective at reaching the largest audience possible.

Background

In 2016, the Air Superiority Flight Plan 2030 stated “the Air Force projected force structure is not capable of fighting and winning against the future threat away without a shift in focus to multi-domain capabilities and capacity” (ECCT, 2016). The Air Force operates systems primarily in the air, space and cyberspace domains as means to project Air Force power. Efforts currently exist to integrate effects in, through, and from those domains against operational objectives, but the ability to do so is sparse and lacks institutional and personnel development. While Multi-Domain Operations (MDO) is a nascent concept to the Air Force, it must begin educating the force on the theory and possible application of MDO. Currently, Captains lack a comprehensive understanding of the Air Force’s warfighting capabilities and limitations, through and from Air, Space, Cyberspace, and sister services Land and Maritime. This lack of understanding hinders the development of operational-level C2 and exacerbates the service’s deficiency in producing joint leaders and teams. While educating the entire force all at once is not feasible, the Air Force must start deliberately educating its Captains to prepare them for operational level leadership and future warfare. The Air Force can utilize Squadron Officer School (SOS) as the initial platform to ensure early MDO theory exposure.

The importance of educating tactical leaders about Air Force warfighting capabilities stems from peer and near-peer nation states observing the U.S.’s military operations over the past three decades and then evolving their capabilities to combat U.S. advantages. Capabilities ranging from Integrated Air Defense Systems to computer network capabilities hold air, space and cyberspace at risk and create anti-access and area denial (A2AD) complexities for the joint force. The U.S and the Department of Defense must evolve and clearly define MDO

relationships within military operations and expertly synchronize this effort through Multi-Domain Command and Control, or MDC2.

Before one establishes an MDO educational curriculum, they need to frame what integrating multiple domains means. MDO integration does not simply mean operating out of several domains, it means harnessing the capabilities of each domain to employ simultaneously against an adversary. The effective employment of MDO will provide an overwhelming force at a tempo that cannot be matched, thus keeping the adversary off-balance and unable to mitigate (ECCT, 2017). The Air Force should operate under the assumption that superiority in every domain will not be feasible and prepare to operate under contested and degraded conditions. Contested and degraded environments will most likely occur at each level: strategic, operational, and tactical. Thus, the Air Force must be able to maneuver and adjust to multiple dynamic situations through advanced command and control at both the operational and tactical levels.

SOS is a leadership focused course, constantly evolving to meet contemporary needs. The course now includes a multi-domain and joint education introduction. Air Force Captains, however, lack Air Force domain integration comprehension, creating knowledge gaps and blind spots when different AFSC tactical experts collaborate. Typically, this perspective is not fostered until the member is a Field Grade Officer. Even though our services promote Airmen with the belief they are capable of carrying out the duties of the rank above them, we fail to set our Captains up for future assignment and deployment success because of the inadequate multi-domain education. By providing a foundational knowledge to fielded tactical experts, Captains will develop a reinforced understanding that joins the cerebral and applied aspects of MDO. When MDO trained officers promote to positions requiring application across a broader perspective, they will understand how all the Air Force war cogs turn.

Air Force Multi-Domain Education Overview and Considerations

The Air Force's force development pipeline for MDO is limited due to it still being in a concept development phase. There are several instances where integration is taking place, but the persistent domain single-scope deficiency is still present. Currently, there are a limited number of school houses and exercises working towards integrating capabilities such as: ACSC-MDOS, RED FLAG, Weapons School, or other exercises. MDO education must begin with the fundamentals of maneuver and planning, leveraging the capabilities and accounting for the limitations of air, space, and cyberspace.

Education must focus on what is most critical and relevant to enable the understanding of how the Air Force is able to conduct operations and provide effects for the Combatant Commands. Classification of information is the largest limiting factor educating MDO material to officers. This factor can be mitigated through adjusting policy, establishing appropriate facilities, and allowing proper read-ins, which would not hinder the proposed unclassified curriculum, allowing for future course enhancement. Because each domain offers well-known capabilities from both offense and defense, the curriculum can start by covering what does not require special access and iteratively over time increase as access is granted and classified environments are established.

The initial educational scope can be limited to high-level introductions and concepts expanding in both breadth and depth over time. The principle of maneuver from *Air Force Doctrine* needs to be emphasized, specifically the concept of basic maneuver types and application to each domain. Then, domain specific education should begin by introducing the theory of each domain expanding the capabilities and limitations. Finally, to demonstrate the understanding of concepts, scenarios would be provided that would drive students to articulate

their comprehension of maneuver in, through, and from the domains in order to meet the scenario's objectives.

Implementation Details and Timelines

Our primary intent is the recommendation of establishing an MDO education and development curriculum for USAF Captains. Our end-state is to ensure all officers are rooted in the principle of maneuver and understand the foundations of MDO. Framed by the motto of "start small, fail fast, win small, scale fast", we developed two courses of action: 1) SOS as a platform and 2) Creating a standalone course.

To meet the intent of creating an MDO curriculum, our first recommended COA is to use SOS as a platform. The end-state is that the MDO curriculum would be integrated into the overall SOS course. This would increase the length of SOS and integrate additional MDO curriculum. We would begin with a validation class of 5% of the student body, approximately 40 students from 1-series AFSCs. The MDO validation course would begin 2-weeks prior to SOS. This would use the academic days in between SOS classes. Additionally, placing the course at the beginning of SOS would allow students selected for the MDO course to share their knowledge with their flights and indirectly expose all Captains to MDO concepts at a deeper level. The first iteration of this SOS expansion could be developed and implemented in six months. The first month would be spent refining the requirements and implementation plan. In the second and third months, the Initial Cadre Develop Team (ICDT) would be assigned and develop the curriculum, primarily pulling the curriculum from existing AFSC specific schoolhouses and integrating it in a cohesive manner. The fourth and fifth months, the syllabus would proceed through the approval and validation process. Curriculum would continue to be reviewed with minor adjustments. In the sixth month, the first student class will begin. This

would break from the traditional AETC model of curriculum development and follow an agile approach. The course would require continual, significant modification as the MDO knowledge base grows and new concepts are tested in an academic environment. The initial cost estimate for this course of action is \$1200 per student, \$20K O&M, and a manpower estimate of 8 instructors. The instructor cadre could initially be provided in a few different ways. The cadre could be taken from the SOS cadre, the ACSC/AWC cadre, MOBILE Training Teams (SMEs throughout the community), or a combination of each. It is recommended that two personnel are appointed the leads to coordinate the desired cadre.

Following several successful validation courses, we would reach our first decision point, did the course meet the intent and should it be expanded? If the answer is yes, we would then increase the number of students attending the course each SOS class. By 2020, 50% of all SOS students, including students from all AFSCs would attend the MDO course. The course would require modification every time we increase the capacity and every time we add additional AFSCs to ensure it is still providing a common foundation without assuming too much prior knowledge. By 2021, assuming the course is still providing small wins, the course would be expanded to 100% of SOS students and fully integrated with SOS.

Our second recommended COA involves creating a stand-alone MDO Tactical (MDO-T) course for deliberate and focused development of competencies fostering a tactical level multi-domain culture. The intent behind this stand-alone course is the same as COA 1's covering Air Force and Joint Doctrine, USAF weapon system capabilities and limitations, maneuver for each domain, and effects integration. This course differs by solely focusing on MDO content for an extended period with an integration capstone. As a four week course, the first two weeks will be spent on educating the member and the following two weeks will be an implementation period

that tests learned knowledge through exercises and planning for a given problem set. The benefits of a stand-alone course include focused doctrine education, expanded understanding of weapon system capabilities and limitations, effective planning skills, and networking opportunities amongst peers.

The implementation timeline for this course is as follows: First, second, and third months planning and creating the school requirements, the fourth and fifth month standing up the Initial Cadre Develop (ICDT) and curriculum development; the sixth month would include syllabus approval & validation, and the seventh month is when the first student class would begin. The initial cost estimate for this COA includes \$2700 per student, \$1.5M Course Development & Infrastructure and a manpower estimate of 8 Instructors. These figures were computed based on standard per diem rates and lodging rates for students. The course development was based on an estimated cost of \$9,200 per course hour of a 160 hour course. (Clark 2015) This path could also be implemented after the proof of concept is validated in the SOS course. As the knowledge base is increased across the force, this course should expand its desired learning objectives, moving from the unclassified basics to the deeper classified applications. Officers going through this course will have a working knowledge of the USAF weapons systems higher level capabilities, solidifying effective MDO operational planning. Leveraging foundational effects based knowledge will overcome classification barriers, making integration seamless. Including a sensitive compartmented information facility (SCIF) in initial funding for the standalone MDO course will facilitate future classified briefings and planning.

Taking into consideration cost, time, and the most effective educational point to reach the widest audience possible, the Air Force can create a two week course teaching MDO principles at the prefix of SOS. This course has the least amount of risk at the lowest cost and time to

implement. When weighed against each other, COA 1 is the most cost effective concept to initiate, easiest to scale up or down as needed, addresses future needs, and meets the mass amount of CGOs across the Air Force, and finally the existing infrastructure at Maxwell allows the ability for hosting the course.

Summary

This paper proposed educational solutions to shift the culture of the United States Air Force. Instead of focusing on individual domain capabilities, the Air Force can utilize, educate, and enhance Multi-domain operations through the two proposed courses of action, developing knowledge at the Captain level inculcating a total force Multi-Domain mindset. To mitigate risk with limited resources, we propose changes occur at a small scale and rapid pace so that we can succeed or fail quickly and scale up as necessary. Our recommended COA is a starting point; an experimental course at the start of SOS that extends existing resources. Our desired end state aims to empower Air Force leaders who effectively wield air, space, and cyberspace capabilities across the range of military operations.

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