

UNIFIED QUEST 2018 DEEP FUTURE WARGAME SUMMARY REPORT

Overview: The UQ18 DFWG occurred from 14 to 18 May 2018 at the U.S. Army War College, Carlisle Barracks, PA. The wargame examined how the Army, employing the Multi-Domain Operations (MDO) concept, contributes multi-domain capabilities to a Joint Force Commander to defeat a regional adversary in a 2035 operating environment. Multinational partners, the Joint Staff and Services, and Training and Doctrine Command Centers of Excellence comprised the wargame's seven working groups. This report highlights insights relative to the MDO and Echelon Above Brigade (EAB) concepts and provides a summary of initial implications developed in detail in the final wargame report.

MDO Concept Insights and Implications

Future adversaries are unique – they require a calibrated MDO conceptual approach. The MDO concept treats future adversaries as homogenous entities with little descriptive variation in terms of capabilities and capacities. In the wargame, the adversary lacked the technology enablers to substantially degrade U.S. forces; however, the adversary mitigated its shortfalls using large numbers of unconventional forces, light infantry, hardened missile and artillery sites, and a robust, longstanding human intelligence network. The adversary exploited battlefield geography to contest U.S. capabilities and domain supremacies; it used subterranean facilities to avoid detection and targeting, dense urban environments to effect operational tempo, and employed obstacle belts tied into channelizing terrain to restrict mobility and increase indirect fire effects. Implication: Commanders must recognize the advantages and limitations of the capabilities they possess when determining how best to employ them against an industrial-based adversary. Not all capabilities, or combinations of capability sets, will be as effective against a less-capable force. A commander must adapt the operational approach to each specific threat environment. Moreover, the use of exquisite (space, cyber, etc.) capabilities against a less-capable opponent may restrict authorities and coordination requirements as their use may invoke third-party/peer-adversary responses.

Extending the competition period. During competition, U.S. forces actively campaign to advance or defend national interests without escalating the situation into large-scale violence that characterizes armed conflict. In the wargame, the presence of forward deployed active component formations at both the theater army and field army initially dissuaded the adversary. However, additional force flow and other activities contesting the adversary's unconventional warfare and reconnaissance forces intensified, rather than decreased adversary reactions. Implications: Forward deployed active component formations are essential to setting conditions and converging capabilities to deter future adversaries. Complementing this strategy is the need for the MDO and EAB concepts to articulate how commanders and staffs must recognize and understand the ways in which the regional information narrative converges into the larger global information campaign to extend competition and avoid crossing the threshold into armed conflict.

MDO Capabilities and Capacities Insights and Implications

Artificial intelligence and network modernization. U.S. Forces require a trusted, secure, integrated network (or system of networks), enabled by interoperable AI to effectively converge joint capabilities across domains from a variety of manned and unmanned platforms at extended distances. One example of this requirement is the Integrated Fires Network (IFN); DFWG staff planners employing multi-domain fires required the IFN to connect sensors, targets, and engagement platforms within time and space to affect target prosecution (sense-see-strike). During the wargame, IFN provided a multi-sourced common operating picture (COP) with joint, interorganizational, and multinational fire control and coordination measures that enabled effective multi-domain fires. Implications: Synchronize system-of-systems networking requirements with a respective set of suitable and feasible material solutions that enables the Army to effectively and efficiently build integrated, secure and reliable future networks. Moreover, the proliferation of AI-enabled systems throughout the force requires development of a staff management structure within formations able to plan and manage the employment of the formation's AI-enabled capabilities and supporting networks. This structure may require development of integrated staff procedures between the formation's operations (i.e., G-3 or S-3) and communications (i.e., G-6 or S-6) staffs.

Multifunctional robotic and autonomous systems (RAS). RAS must rapidly consolidate and reorganize; transfer control between manned and unmanned vehicles; and conduct common tasks such as network extension, electronic warfare, obscuration, mission command, and chemical, biological, radiological, and nuclear (CBRN) reconnaissance. In the wargame, the scale and complexity of RAS-related tasks within the

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dense urban environment, and the number of RAS platforms performing multi-domain and multi-dimensional warfighting tasks that increased the number of systems in the formation, required additional staff and/or operator planning, control, and management. Implication: Dense urban environments and increases in the number of RAS capabilities performing single, functional warfighting tasks correlates with increases on each echelon's network requirements, sustainment needs, and staff size. Staff size could trend upward as the number of specialists needed to repair, replace, and operate these systems also increases.

Anti-access/area denial. The MDO concept is predisposed toward peer adversaries that rely on technical means to deny U.S. forces and partners access from strategic and operational distances, whereas non-peer adversaries rely on asymmetric ways and means to deny access. In the wargame, these asymmetries included dense urban environments, and restrictive terrain coupled with direct action attacks in operational and tactical support areas, including ground lines of communication and along axes of advance. Implications: U.S. forces operating in restrictive terrain and dense urban environments require CBRN protection and decontamination capabilities and capacities that deny the enemy's ability to disrupt, deny, or fix friendly and partner forces.

MDO Force Organization Insights and Implications

Command and control of RAS-enabled formations. The proliferation of aerial and ground RAS in echelons below brigade (EBB) will exceed the abilities of commanders and staffs to employ the systems effectively. In the wargame, the ability to command and control (C2) maneuver formations while simultaneously managing the operational airspace and the electromagnetic spectrum appeared overwhelming to the battalion staff. Implications: Coincidental development of AI-enabled platforms and the network is necessary to effectively manage RAS proliferation at EBB and should precede or coincide with the fielding of RAS in those formations. The Army should determine how AI can support the staff's planning and mission command tasks given the increased volume and speed of systems in its operational area. Additionally, determine and designate new or modified staff tasks required to facilitate the C2 of RAS-enabled formations, and the impact on current staff responsibilities and composition.

Sustaining RAS-enabled formations. RAS resupply can improve force protection by reducing personnel numbers required to deliver logistic packages (LOGPAC) in the Close Area and dense urban environments. Additionally, large RAS platforms must be multi-functional, e.g.; capable to transport sustainment commodities and capable to transport casualties to casualty collection points or ambulance exchange points. Implications: RAS-enabled vehicles require the ability to self-load/unload and deliver relevant classes of supply, such as Class III, V, and VIII, if humans are to remain out of a formation's resupply process. LOGPAC RAS-enabled vehicles require changes to current tactics, techniques, or procedures to be successful in the future. Furthermore, supplies have to be packaged in standardized containers, similar to an ammunition magazine or fuel cells, to expedite rapid pick up and off-load. Tasks that require problem solving, such as vehicle recovery or on-site repair may be beyond technological abilities in 2035.

Impact of RAS on organizational manning. Continued fielding of RAS into a formation increases the complexity of its C2 and sustainment. A number of technologies can mitigate this complexity and quite possibly lead to the point where fundamental change to manned-unmanned organizational structure is possible. AI and platform autonomy must enable a future formation's support structure to sustain subordinate formations with minimally manned or autonomous support vehicles, otherwise growth of the formation's "tail" occurs commensurate with the increased fielding of RAS into the formation. Implications: Develop RAS-enabling technologies that support reduction of formations' size while enhancing their effectiveness. Focus investments in AI, assured communications, reliable and durable sensors that enable autonomous platforms to operate, and protection and signature reduction of manned control vehicles.