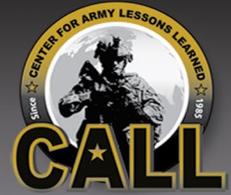




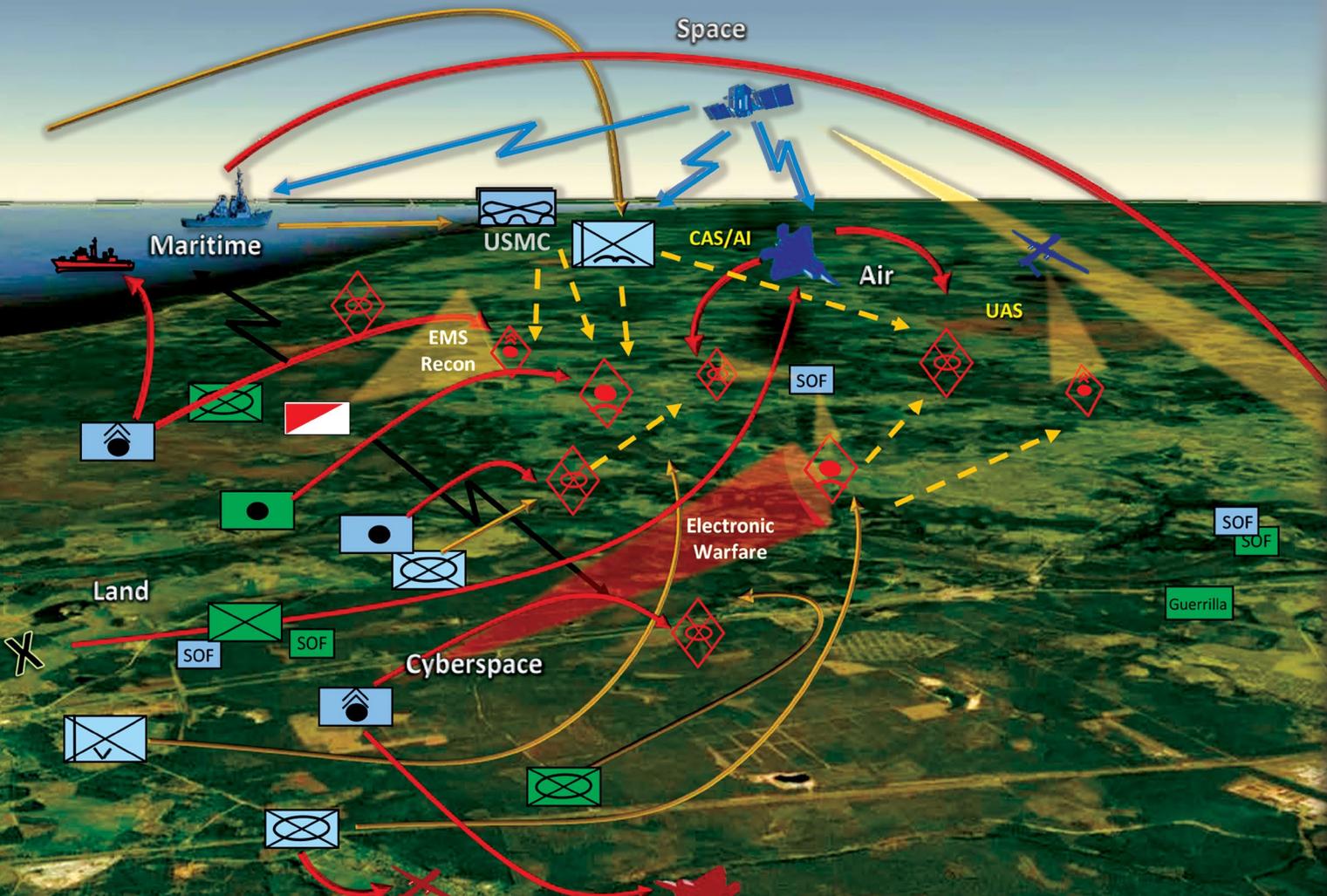
# CATALOG



NO. 19-19

SEP 2019

# MULTI-DOMAIN OPERATIONS



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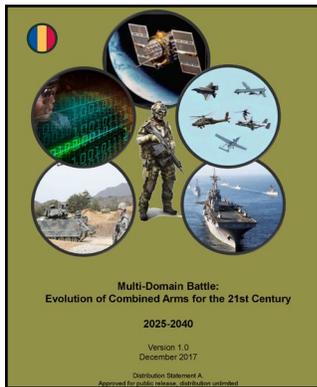
## Introduction

The following web links provide some useful insights and perspectives related to the emerging concept of multi-domain operations (MDO). This catalog is not all encompassing, but rather serves as a primer and vehicle for analytical discourse. This catalog is a “living” document and we will update it periodically. MDO documents in this catalog span the period from 2014 to 2019, highlighting the evolution of the MDO concept and the beginning of its operational application by the Army.

**Note:** The cover design graphic is with the permission of Military Review.

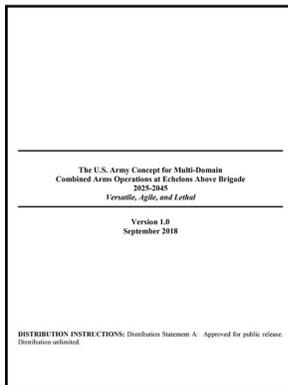
**Multi-Domain Battle: Driving Change to Win in the Future**  
 GEN David G. Perkins, U.S. Army, Military Review, July-August 2017

**Multi-Domain Battle: Evolution of Combined Arms for the 21st Century – 2025-2040**  
 TRADOC, December 2017



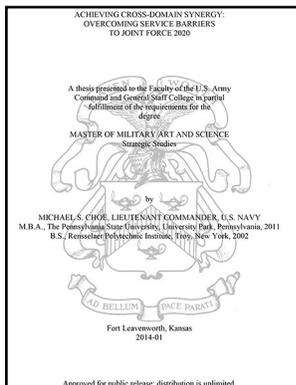
This publication “describes how Army forces, as part of a joint force and with partners, will operate, fight, and campaign successfully across space, cyberspace, and the domains of air, land, and maritime against peer adversaries in 2025-2040.” Available at [https://www.tradoc.army.mil/Portals/14/Documents/MDB\\_Evolutionfor21stpercent20\(1\).pdf](https://www.tradoc.army.mil/Portals/14/Documents/MDB_Evolutionfor21stpercent20(1).pdf)

**The U.S. Army Concept for Multi-Domain Combined Arms Operations at Echelons above Brigade 2025-2045: Versatile, Agile, and Lethal**  
 Combined Arms Center, September 2018



This U.S. Army concept for multi-domain combined arms operations at echelons above brigade “describes six challenges in the expanded multi-domain operations framework and how future Army forces gain and maintain the initiative across the competition continuum, the full range of military operations, and each unique AOR [area of operations] to meet those challenges.” Available at <https://usacac.army.mil/sites/default/files/documents/ArmyEABConcept.pdf>

**Achieving Cross-Domain Synergy: Overcoming Service Barriers to Joint Force 2020**  
 Lt. Cmdr. Michael S. Choe, U.S. Navy, U.S. Army Command and General Staff College,  
 June 2014



Lt. Cmdr. Choe says, “In September 2012, the Chairman of the Joint Chiefs of Staff released *A Capstone Concept for Joint Operations: Joint Force 2020*, which laid out a concept of ‘Globally Integrated Operations.’ The concept relies heavily on the individual services to embrace joint integration and collaboration despite clear cultural barriers that make such cooperation difficult. The purpose of this thesis is to identify the primary service barriers to joint integration and find solutions to overcome them.” Available at <http://cgsc.contentdm.oclc.org/utis/getdownloaditem/collection/p4013coll2/id/3117/filename/3168.pdf/mapsto/pdf>

**Multi-Domain Operations: A Subtle but Significant Transition in Military Thought**  
 Dr. Jeffrey M. Reilly, Air and Space Power Journal, Spring 2016



Dr. Reilly says, “On 17 November 2011, Chairman of the Joint Chiefs of Staff GEN Martin Dempsey asked the Military Education Coordination Council the prophetic question, ‘What’s after joint?’ After more than four years, that question remains ostensibly unanswered. The answer may be multi-domain operations. GEN Dempsey’s inquiry was spurred by the fact that historical approaches to achieving superiority in the air, land, and sea domains may no longer be valid.” Available at [www.armyupress.army.mil/Portals/7/online-publications/documents/V-Reilly.pdf](http://www.armyupress.army.mil/Portals/7/online-publications/documents/V-Reilly.pdf)

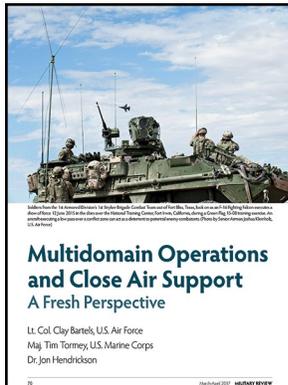
**Multi-Domain Battle: A New Concept for Land Forces**  
 Albert Palazzo and David P. McLain III, Small Wars Journal, 15 SEP 2016



“The way forward for land forces in the joint fight is a new concept: the multi-domain battle,” according to Palazzo and McLain. “This concept promises to restore a commander’s ability to maximize the tools at their disposal in and across all domains.” Available at <https://warontherocks.com/2016/09/multi-domain-battle-a-new-concept-for-land-forces/>

## Multidomain Operations and Close Air Support: A Fresh Perspective

Lt. Col. Clay Bartels, U.S. Air Force; Maj. Tim Tormey, U.S. Marine Corps; and Dr. Jon Hendrickson; Military Review, March-April 2017



According to the authors, “Examining close air support (CAS), in conjunction with other overlapping missions that occur at the intersection of the land and air domains, effectively demonstrates the necessity for multi-domain operations. Multi-domain thinking in the CAS arena allows the U.S. military a better understanding of how to maximize the flexibility and capability that airpower provides when applying multi-role platforms such as the F-35 [Strike Fighter].” Available at <https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/March-April-2017/ART-011/>

## Multi-Domain Confusion: All Domains Are Not Created Equal

Erik Heftye, RealClear Defense, 26 MAY 2017



“The advent of multi-domain battle begs a question, which remains unanswered: what constitutes a military domain and why make this distinction?” Heftye explores this question. Available at [https://www.realcleardefense.com/articles/2017/05/26/multi-domain\\_confusion\\_all\\_domains\\_are\\_not\\_created\\_equal\\_111463.html](https://www.realcleardefense.com/articles/2017/05/26/multi-domain_confusion_all_domains_are_not_created_equal_111463.html)

## Multi-Domain Battle: Driving Change to Win in the Future

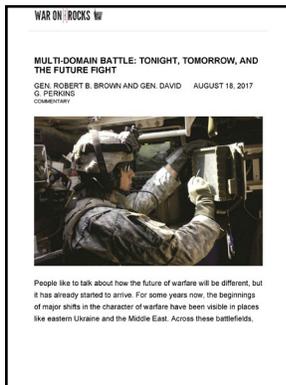
GEN David G. Perkins, U.S. Army, Military Review, July-August 2017



According to the introduction, this article “frames the ideas taking shape for how land forces might conduct future operations under the multi-domain battle concept.” The article incorporates relevant historical observations and lessons. Available at <https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/July-August-2017/Perkins-Multi-Domain-Battle/>

## Multi-Domain Battle: Tonight, Tomorrow, and the Future Fight

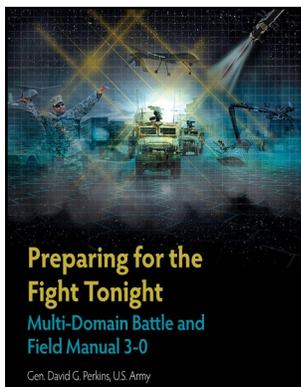
GEN Robert Brown, U.S. Army; and GEN David G. Perkins, U.S. Army, War on the Rocks, 18 AUG 2017



Generals Brown and Perkins say that to be ready for the next war, “The U.S. Army and the other services must effectively innovate and adapt concepts, equipment, and training. The future battlefield will be one where integration into joint and multinational forces is a prerequisite for victory. To get there, we must establish a clear path to prepare the force for the fight tonight, tomorrow, and in the future.” Available at <https://warontherocks.com/2017/08/multi-domain-battle-tonight-tomorrow-and-the-future-fight/>

## Preparing for the Fight Tonight: Multi-Domain Battle and Field Manual 3-0

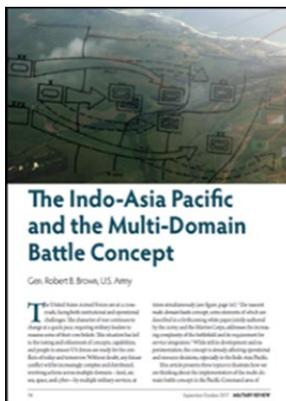
GEN David G. Perkins, U.S. Army, Military Review, September-October 2017



This article discusses “the rationale and the approach to incorporate aspects of multi-domain battle into Field Manual 3-0, Operations [06 OCT 2017],” according to the introduction. Available at <https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/September-October-2017/Perkins-II-Preparing-for-the-Fight-Tonight/>

## The Indo-Asia Pacific and the Multi-Domain Battle Concept

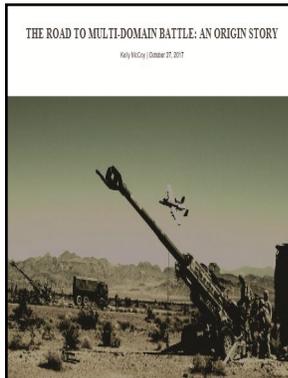
GEN Robert B. Brown, U.S. Army, Military Review, September-October 2017



According to GEN Brown, “This article presents three topics to illustrate how we are thinking about the implementation of the multi-domain battle concept in the Pacific Command’s area of responsibility. It briefly discusses the strategic situation in the Indo-Asia Pacific area, which typifies the need for a new operating concept to integrate all U.S. Armed Forces. Then, it describes the multi-domain battle concept, including the three elements that help define its desired effects: joint integration, technology, and people. Finally, it presents a vignette of multi-domain battle as it might apply at the tactical level.” Available at <https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/September-October-2017/The-Indo-Asia-Pacific-and-the-Multi-Domain-Battle-Concept/>

## The Road to Multi-Domain Battle: An Origin Story

Kelly McCoy, Modern War Institute at West Point, 27 OCT 2017



McCoy points out “a clear evolutionary link” between MDO and “previous concepts like AirLand Battle, Army After Next, Capstone Concept for Joint Operations, and the Army Operating Concept.”

Available at <https://mwi.usma.edu/road-multi-domain-battle-origin-story/>

## Multi-Domain Battle: The Advent of Twenty-First Century War

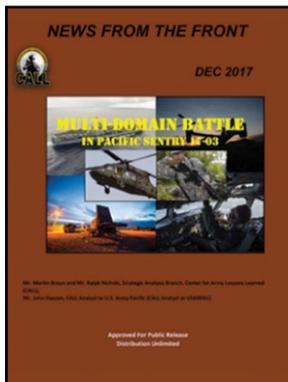
GEN David G. Perkins, U.S. Army, Military Review, November-December 2017



This article discusses how the Army must adapt to meet the requirements for a future force operating in a multi-domain environment. Available at <https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/November-December-2017/Multi-Domain-Battle-The-Advent-of-Twenty-First-Century-War/>

## Multi-Domain Battle in Pacific Sentry 17-03

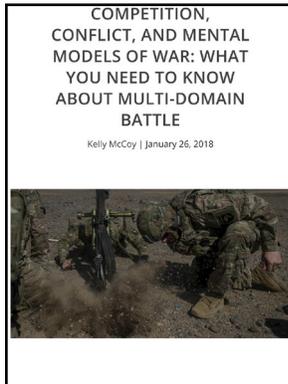
CALL News from the Front, December 2017



This article presents key leader insights, lessons, and best practices in using the concept of multi-domain battle during Exercise Pacific Sentry 17-03 as described by U.S., joint, and allied leadership and exercise participants. It provides insights from U.S. Army Pacific, Pacific Air Forces, and a multinational partner’s perspective (Australia). Available at <https://call2.army.mil/toc.aspx?document=17580>

## Competition, Conflict, and Mental Models of War: What You Need to Know about Multi-Domain Battle

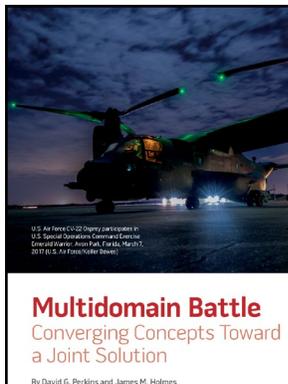
Kelly McCoy, Modern War Institute at West Point, 26 JAN 2018



“When you apply context to core components of concepts, it becomes clear the concept addresses the complexities of the future operating environment with considerable depth,” according to McCoy. “It is important to reinforce that the focus is keenly on the over-arching concept of multi-domain battle.” Available at <https://mwi.usma.edu/competition-conflict-mental-models-war-need-know-multi-domain-battle/>

## Multidomain Battle: Converging Concepts Toward a Joint Solution

GEN David G. Perkins, U.S. Army; and Gen. James M. Holmes, U.S. Air Force, Joint Force Quarterly 88, January 2018



According to Generals Perkins and Holmes, “The purpose of this article is to describe what the TRADOC and Air Combat Command are doing to provide input to the Army and Air Force, collaboratively, to integrate and converge their individual land and air domain capabilities in order to create the merged multidomain capabilities that will be required for success in future combat.” Available at <https://ndupress.ndu.edu/Publications/Article/1412174/multidomain-battle-converging-concepts-toward-a-joint-solution/>

## Multidomain Battle: Time for a Campaign of Joint Experimentation

Kevin M. Woods and Thomas C. Greenwood, Joint Force Quarterly 88, January 2018



According to the authors, “This article explores the debate around the multi-domain concept. Developing a new warfighting concept is difficult because new concepts need to demonstrate that they are sufficiently better than the status quo at addressing the challenges and opportunities in order to justify the disruptive effects of the change.” Available at <https://ndupress.ndu.edu/Publications/Article/1411615/multidomain-battle-time-for-a-campaign-of-joint-experimentation/>

## Joint, Multi-Domain Operations in Pacific Sentry 18-2

Center for Army Lessons Learned (CALL) Initial Impressions Report, March 2018

This report provides insights, lessons, best practices, and key leader insights from Exercise Pacific Sentry 18-2. The exercise tested the emerging concept of multi-domain battle. This report is the fourth installment of a series of publications focused on multi-domain battle throughout the Asia-Pacific region. Available to authorized users with a common access card (CAC) at <https://call2.army.mil/toc.aspx?document=17632>

## Multi-Domain Operations in the Pacific: Insights from Yama Sakura 73

CALL Initial Impressions Report Number 18-32, July 2018

According to this report, “Yama Sakura exercises have historically forged bilateral interoperability and security cooperation between U.S. Army Pacific, U.S. Army Japan, and Japanese government/Japanese Defense Forces. The essential reason for establishing the exercises is to reaffirm U.S. obligations for mutual defense. Yama Sakura 73 (YS73) took place at Camp Sendai, Japan. It incorporated testing of the emerging MDO concept as an important initial step toward validation.” Available to authorized users with a CAC at <https://call2.army.mil/toc.aspx?document=17749>

## Accelerating Multi-Domain Operations: Evolution of an Idea

GEN Stephen J. Townsend, U.S. Army, Military Review, September-October 2018



“Multi-domain battle has a clear origin,” according to GEN Townsend. “Origin stories establish the foundation from which lasting ideas emerge. However, for ideas to have a lasting impact, they must evolve.” Available at <https://www.armyupress.army.mil/Portals/7/military-review/Archives/English/SO-18/Townsend-Multi-Domain.pdf>

## Beyond the Gray Zone: Special Operations in Multidomain Battle

James E. Hayes III, National Defense University Press, October 2018



Hayes wrote, “Integration and interdependence lie at the heart of multi-domain concept, which envisions special operations forces (SOF) conducting activities in support of conventional forces and vice versa. What specifically should we expect SOF to do within the context of multi-domain battle? What unique function could SOF play in assisting the joint force to counter this new threat paradigm?” Available at [https://ndupress.ndu.edu/Portals/68/Documents/jfq/jfq-91/jfq-91\\_60-66\\_Hayes.pdf?ver=2018-11-06-094122-477](https://ndupress.ndu.edu/Portals/68/Documents/jfq/jfq-91/jfq-91_60-66_Hayes.pdf?ver=2018-11-06-094122-477)

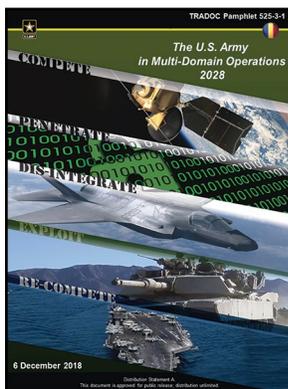
## Multi-Domain Operations: RIMPAC 2018

CALL Initial Impressions Report, October 2018

According to this report, “The purpose of this publication is to provide insights, lessons, and best practices for using the emerging concept of MDO during Exercise Rim of the Pacific (RIMPAC) 2018.” This report focuses on the employment of the Army Multi-Domain Task Force in the Asia-Pacific region. Available to authorized users with a CAC at <https://call2.army.mil/toc.aspx?document=17793>

## The U.S. Army in Multi-Domain Operations 2028

TRADOC Pamphlet (PAM) 525-3-1, 06 DEC 2018



TRADOC PAM 525-3-1 describes how the Army contributes to joint force principal tasks as defined in the Summary of the National Defense Strategy: Deter and Defeat Chinese and Russian Aggression in both Competition and Conflict. Available at [https://www.tradoc.army.mil/Portals/14/Documents/MDO/TP525-3-1\\_30Nov2018.pdf](https://www.tradoc.army.mil/Portals/14/Documents/MDO/TP525-3-1_30Nov2018.pdf)

## Challenges to Security in Space

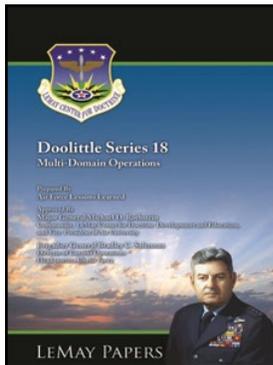
Defense Intelligence Agency, January 2019



According to the authors, “The advantage the United States holds in space, and its perceived dependence on it, will drive actors to improve their ability to access and operate in and through space. These improvements can pose a threat to space-based services across the military, commercial, and civil space sectors.” Available at [https://www.dia.mil/Portals/27/Documents/News/Military%20Power%20Publications/Space\\_Threat\\_V14\\_020119\\_sm.pdf](https://www.dia.mil/Portals/27/Documents/News/Military%20Power%20Publications/Space_Threat_V14_020119_sm.pdf)

## Doolittle Series 18: Multi-Domain Operations

Air Force Lessons Learned, LeMay Papers, Air University Press, 09 JAN 2019



This article is the first in this series from Air University’s LeMay Center Wargaming Institute, Doolittle Series (DS18) chartered by the Chief of Staff of the U.S. Air Force to explore multi-domain warfighting concepts. Available at [https://www.airuniversity.af.edu/Portals/10/AUPress/Papers/LP\\_0003\\_Multi\\_Domain\\_Operations.pdf](https://www.airuniversity.af.edu/Portals/10/AUPress/Papers/LP_0003_Multi_Domain_Operations.pdf)

## U.S. Army General Robert B. Brown: Multi-Domain Operations

Critical Media Channel, March 2019



This is an interview with GEN Brown about future warfare known as multi-domain operations. Available at [https://www.youtube.com/watch?v=ahdSysH\\_pGw](https://www.youtube.com/watch?v=ahdSysH_pGw)

## The Case Against Maneuver Warfare

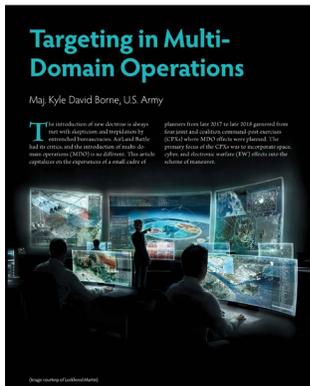
Michael Gladius, Small Wars Journal, April 2019



Gladius writes that, “Maneuver warfare has several weaknesses that do not translate well into the American way of war. In this essay, we will look at two ways in which to define maneuver warfare, the weaknesses of maneuver warfare, and how the U.S. can incorporate maneuver warfare benefits into doctrine.” Available at <https://smallwarsjournal.com/jrnl/art/case-against-maneuver-warfare>

## Targeting in Multi-Domain Operations

MAJ Kyle David Borne, U.S. Army, Military Review, May-June 2019



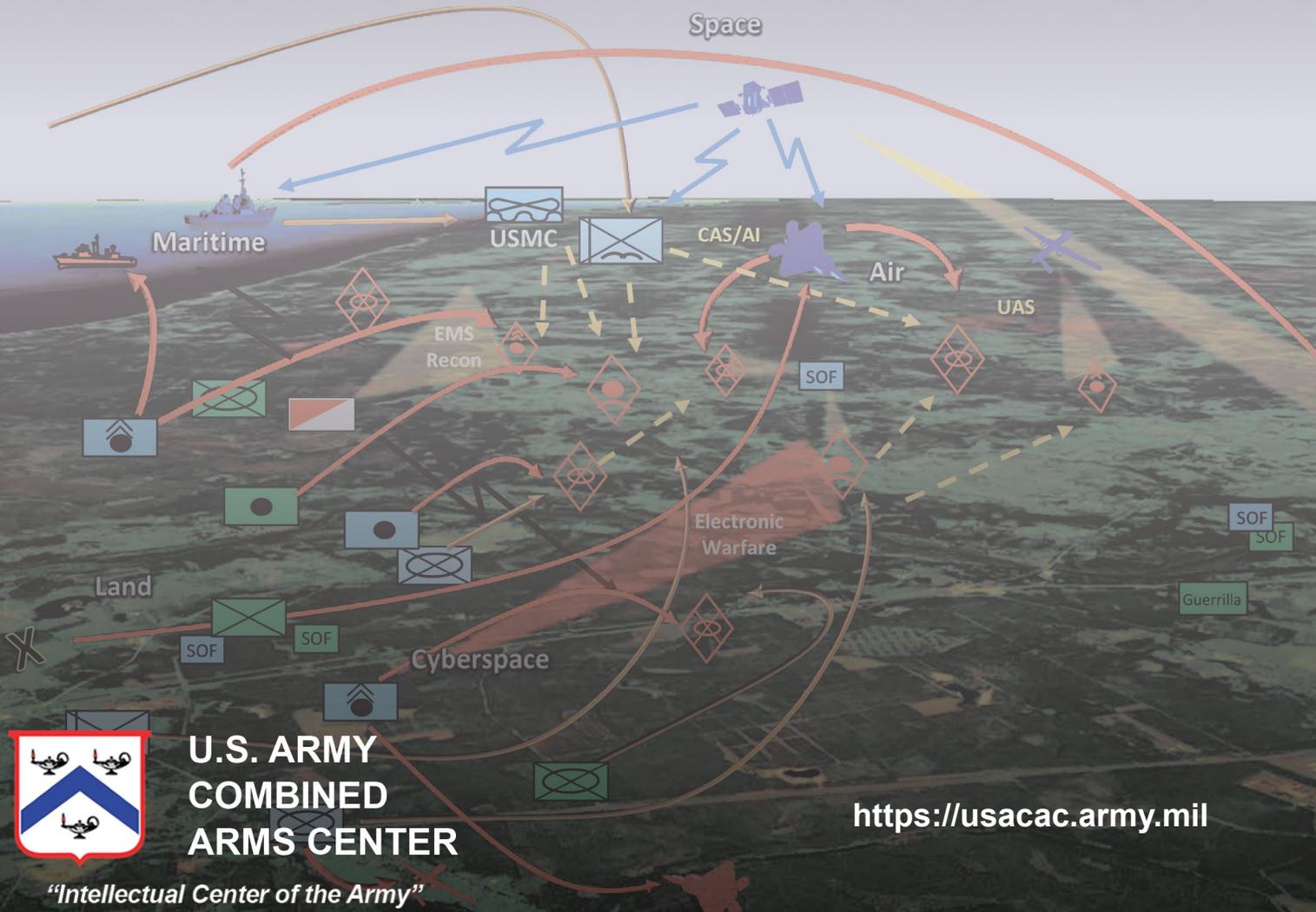
“This article capitalizes on the experiences of a small cadre of planners from late 2017 to late 2018. The experiences are from four joint and coalition command post exercises (CPXs) where multi-domain operations effects planning occurred,” MAJ Borne says. “The primary focus of the CPXs was to incorporate space, cyber, and electronic warfare effects into the scheme of maneuver.” Available at [https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/MAY-June-2019/Borne-Targeting-Multi-Domain /](https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/MAY-June-2019/Borne-Targeting-Multi-Domain/)



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