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

6 December 2018

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Foreword

From the Chief of Staff of the Army

America's adversaries have studied US operations closely during Operations DESERT STORM, IRAQI FREEDOM, and ENDURING FREEDOM. They know the American way of war well and that we excel in a way of war that emphasizes joint and combined operations; technological dominance; global power projection; strategic, operational, and tactical maneuver; effective joint fires; sustainment at scale; and mission command initiative.

Simultaneously, emerging technologies like artificial intelligence, hypersonics, machine learning, nanotechnology, and robotics are driving a fundamental change in the character of war. As these technologies mature and their military applications become more clear, the impacts have the potential to revolutionize battlefields unlike anything since the integration of machine guns, tanks, and aviation which began the era of combined arms warfare.
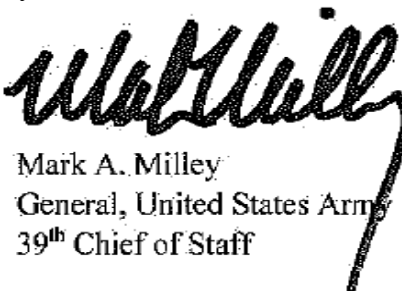
Strategic competitors like Russia and China are synthesizing emerging technologies with their analysis of military doctrine and operations. They are deploying capabilities to fight the US through multiple layers of stand-off in all domains – space, cyber, air, sea, and land. The military problem we face is defeating multiple layers of stand-off in all domains in order to maintain the coherence of our operations.

Therefore, the American way of war must evolve and adapt. *The U.S. Army in Multi-Domain Operations, 2028* is the first step in our doctrinal evolution. It describes how US Army forces, as part of the Joint Force, will militarily compete, penetrate, dis-integrate, and exploit our adversaries in the future.

This product is not a final destination, but is intended to provide a foundation for continued discussion, analysis, and development. We must examine all aspects of our warfighting methods and understand how we enable the joint force on the future battlefield. We must challenge our underlying assumptions, and we must understand the capabilities and goals of our potential enemies. That is how we change our warfighting techniques and build the fighting forces we need in the future. It is also how we maximize deterrence and, if necessary, win future wars.

Read, study, and dissect the multi-domain operations concept in this document. Every one of you is part of our evolution and the construction of the future force, and we want your critical feedback. Our intent is to publish another iteration in about 12 months following feedback from various wargames and exercises. We are laying the cornerstone for the success of our future Army in a profession where there is no room for second place. With your help, we will ensure America's Army is ready, lethal, and prepared to destroy its enemies now and in the future, in any domain, anytime, anywhere.

Army Strong!

Mark A. Milley
General, United States Army
39th Chief of Staff

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Preface

From the Commanding General, U.S. Army Training and Doctrine Command

One of our duties as Army professionals is to think deeply and clearly about the problem of armed conflict in the future so that we can build and prepare our Army to deter that conflict and, if necessary, fight and win it. As we consider the future, our Army's challenge is clear. In a new era of great power competition, our nation's adversaries seek to achieve their strategic aims, short of conflict, by the use of *layered stand-off* in the political, military and economic realms to separate the U.S. from our partners. Should conflict come, they will employ *multiple layers of stand-off* in *all domains--land, sea, air, space and cyberspace--*to separate U.S. forces and our allies in time, space, and function in order to defeat us.

If they are successful, we risk losing the strategic depth that gives our Joint Force its operational advantage and enables our offensive military capability. As a nation, we rely on our ability to project power from the Continental United States and to integrate the actions of the Joint Force globally. Our adversaries seek to fracture this capability and erode the United States' strategic advantage--the greatest challenge to U.S. security, power and influence to emerge in the 21st century. The American way of war must evolve if we are to successfully thwart the aims of our adversaries in competition or to defeat them in conflict.

The U.S. Army in Multi-Domain Operations 2028 concept proposes a series of solutions to solve the problem of *layered standoff*. The **central idea** in solving this problem is the *rapid and continuous integration of all domains of warfare* to deter and prevail as we *compete* short of armed conflict. If deterrence fails, Army formations, operating as part of the Joint Force, *penetrate* and *dis-integrate* enemy anti-access and area denial systems; *exploit* the resulting freedom of maneuver to defeat enemy systems, formations and objectives and to achieve our own strategic objectives; and consolidate gains to force a *return to competition* on terms more favorable to the U.S., our allies and partners.
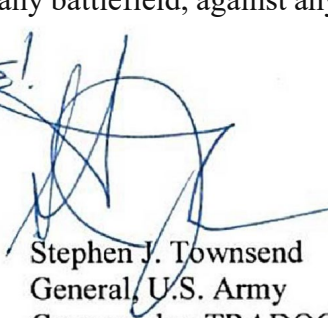
To achieve this, the Army must evolve our force, and our operations, around three core tenets. *Calibrated force posture* combines position and the ability to maneuver across strategic distances. *Multi-domain formations* possess the capacity, endurance and capability to access and employ capabilities across all domains to pose multiple and compounding dilemmas on the adversary. *Convergence* achieves the rapid and continuous integration of all domains across time, space and capabilities to overmatch the enemy. Underpinning these tenets are mission command and disciplined initiative at all warfighting echelons.

To win tomorrow, we must evolve how we organize and integrate the Army as part of the Joint Force. To do this we will (1) continue to refine a warfighting concept that provides our azimuth to the future--***The U.S. Army in Multi-Domain Operations 2028*** is that concept; (2) develop a comprehensive Army modernization strategy linked to this concept and synchronized with a joint approach to force development; (3) drive rapid, non-linear solutions in Army doctrine, organization, training, material, leadership and education, personnel, facilities, and policy; (4) deepen the operational integration of general purpose and special operations forces and with our allies and partners.

This concept is about warfighting and its centerpiece is the American Soldier. Throughout the United States Army's 243-year history, the grit, ingenuity and initiative of the American Soldier stands at the forefront of our Nation's success in peace, competition, and armed conflict.

As a concept, this is not the final answer. We will refine and update this concept as we learn from our operations, exercises and experiments as well as from other services, allies and partners and even our adversaries. The evolution of this concept into doctrine and practice will inform the way the Army recruits, trains, educates, operates and drives constant improvement and change to ensure the U.S. Army can deter, fight and win on any battlefield, against any foe, now and into the future.

Stephen J. Townsend
General, U.S. Army
Commander, TRADOC

The Army in Multi-Domain Operations

Operational Environment

- Contested in all domains
- Increasingly lethal, expanded battlefield
- Increasingly complex environment
- Challenged deterrence

Russian and Chinese Anti-Access and Area Denial Systems Create Multiple Layers of Stand-off

Competition

Creating stand-off by separating the U.S. and partners politically with…
- National- and district-level forces
- Unconventional warfare
- Information warfare
- Conventional forces: Long-, mid-, and short-range systems

…to fracture alliances and win without fighting

Armed Conflict

Creating stand-off by separating the Joint Force in time, spaces, and function with…
- National- and district-level forces
- Conventional forces: Long-, mid-, and short-range systems
- Unconventional warfare
- Information warfare

…to win quickly with a surprise, fait accompli campaign

Central Idea: Army forces, as an element of the Joint Force, conduct Multi-Domain Operations to prevail in competition; when necessary, Army forces penetrate and dis-integrate enemy anti-access and area denial systems and exploit the resultant freedom of maneuver to achieve strategic objectives (win) and force a return to competition on favorable terms.

Multi-Domain Operations (MDO) Problems

1. How does the Joint Force **compete** to enable the defeat of an adversary's operations to destabilize the region, deter the escalation of violence, and, should violence escalate, enable a rapid transition to armed conflict?

2. How does the Joint Force **penetrate** enemy anti-access and area denial systems throughout the depth of the Support Areas to enable strategic and operational maneuver?

3. How does the Joint Force **dis-integrate** enemy anti-access and area denial systems in the Deep Areas to enable operational and tactical maneuver?

4. How does the Joint Force **exploit** the resulting freedom of maneuver to achieve operational and strategic objectives through the defeat of the enemy in the Close and Deep Maneuver Areas?

5. How does the Joint Force **re-compete** to consolidate gains and produce sustainable outcomes, set conditions for long-term deterrence, and adapt to the new security environment?

Tenets of Multi-Domain Operations

Calibrated Force Posture
- Forward presence forces*
- Expeditionary forces**
- National-level capabilities
- Authorities

* contact and blunt forces; ** blunt and surge forces

Multi-Domain Formations
- Conduct independent maneuver
- Employ cross-domain fires
- Maximize human potential

Convergence (time, space, capabilities)
- Cross-domain synergy
- Layered options
- Mission command / disciplined initiative

Convergence at Echelon

XXXX
Theater Army

XXXX
Field Army

XXX
Corps

XX
Division

Theater Army	Field Army	Corps	Division
• Provides AOR-tailored capability • Maintains enduring initiative • Sets the theater • Enables expeditionary maneuver • Responds immediately to regional emergencies • Protects bases, key nodes, and networks	• Executes competition against a near-peer • Conducts all-domain operational preparation of the environment • Provides credible deterrence • Commands multiple corps • Enables partners and SOF • Employs long-range fires	• Tailors to multiple missions and roles (e.g., Joint Task Force) • Coordinates deep cross-domain maneuver • Commands multiple divisions • Shapes Close Areas: enemy mid-range fires and IADS • Defeats long-range fires	• Commands multiple BCTs and enablers • Converges cross-domain capabilities in the Close Area • Shapes Deep Maneuver Area • Executes expeditionary and deep maneuver • Dominates the close fight

Compete, Penetrate, Dis-integrate, Exploit, and Re-compete

Compete to expand the competitive space:

- Enable defeat of information and unconventional warfare
- Conduct intelligence and counter adversary reconnaissance
- Demonstrate credible deterrence

Penetrate strategic and operational stand-off:

- Neutralize enemy long-range systems
- Contest enemy maneuver forces
- Maneuver from operational and strategic distances

Dis-integrate the enemy's anti-access and area denial systems:

- Defeat enemy long-range systems
- Neutralize enemy short-range systems
- Conduct independent maneuver
- Conduct deception

Exploit freedom of maneuver to defeat enemy objectives:

- Defeat enemy mid-range systems
- Neutralize enemy short-range systems
- Maneuver to isolate and defeat enemy maneuver forces

Re-compete to consolidate and expand gains:

- Secure terrain and populations physically
- Enable sustainable outcomes with partners
- Set conditions for long-term deterrence
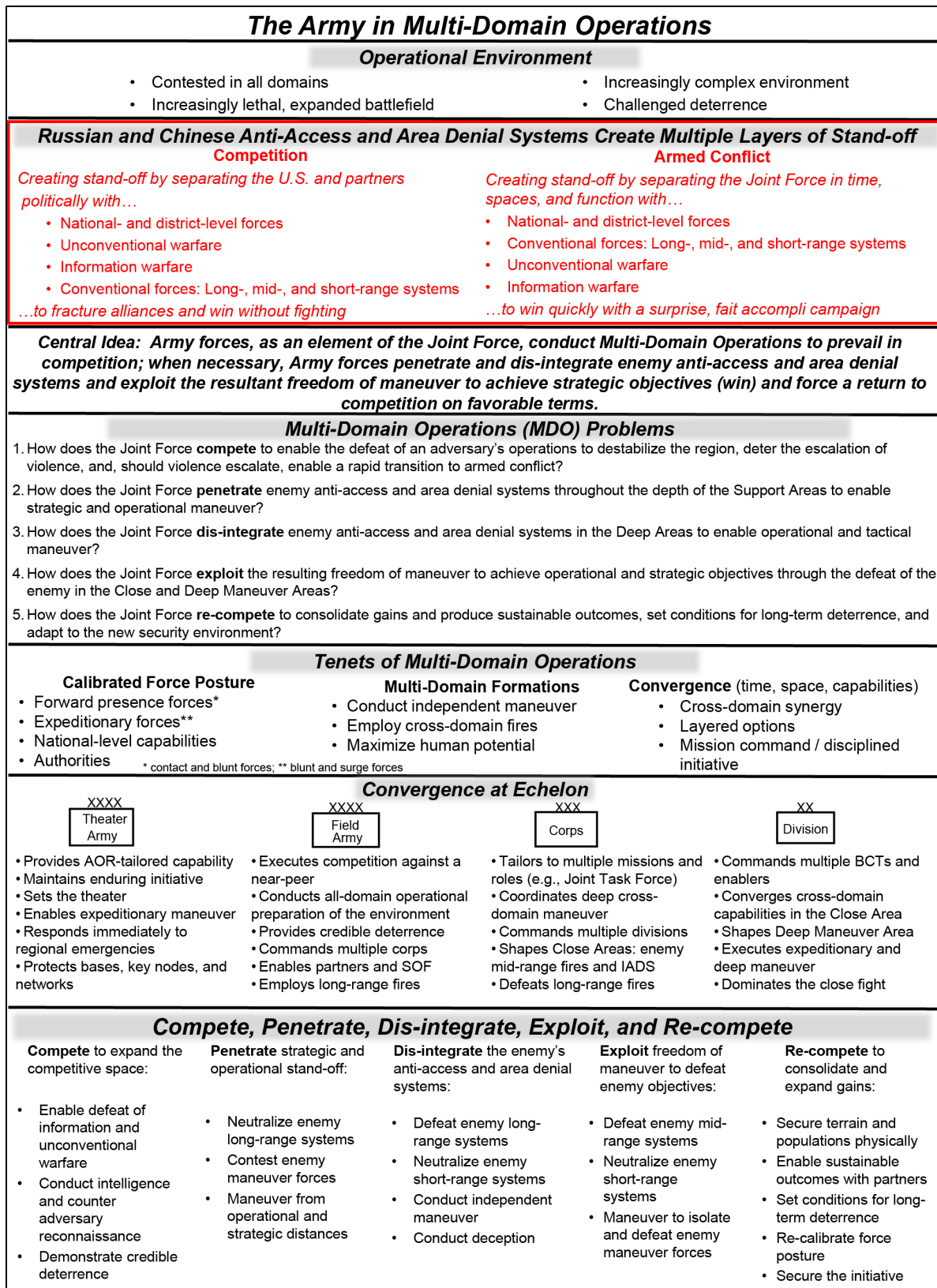- Re-calibrate force posture
- Secure the initiative

Figure 1. Logic map

Executive Summary

1. **Purpose: From *Multi-Domain Battle* to *Multi-Domain Operations*.** TRADOC Pamphlet 525-3-1, *The U.S. Army in Multi-Domain Operations 2028* expands upon the ideas previously explained in *Multi-Domain Battle: Evolution of Combined Arms for the 21st Century*. It describes how the Army contributes to the Joint Force's principal task as defined in the unclassified *Summary of the National Defense Strategy*: deter and defeat Chinese and Russian aggression in both competition and conflict. *The U.S. Army in Multi-Domain Operations* concept proposes detailed solutions to the specific problems posed by the militaries of post-industrial, information-based states like China and Russia. Although this concept focuses on China and Russia, the ideas also apply to other threats.

2. **The problem.**

   a. **Emerging operational environment.** Four interrelated trends are shaping competition and conflict: adversaries are contesting all domains, the electromagnetic spectrum (EMS), and the information environment and U.S. dominance is not assured; smaller armies fight on an expanded battlefield that is increasingly lethal and hyperactive; nation-states have more difficulty in imposing their will within a politically, culturally, technologically, and strategically complex environment; and near-peer states more readily compete below armed conflict making deterrence more challenging.[1] Dramatically increasing rates of urbanization and the strategic importance of cities also ensure that operations will take place within dense urban terrain. Adversaries, such as China and Russia, have leveraged these trends to expand the battlefield in time (a blurred distinction between peace and war), in domains (space and cyberspace), and in geography (now extended into the Strategic Support Area, including the homeland) to create tactical, operational, and strategic stand-off.[2] For the purpose of this document, Russia serves as the pacing threat. In fact, Russia and China are different armies with distinct capabilities, but assessed to operate in a sufficiently similar manner to orient on their capabilities collectively.

   b. **China and Russia in competition.** In a state of continuous competition, China and Russia exploit the conditions of the operational environment to achieve their objectives without resorting to armed conflict by fracturing the U.S.'s alliances, partnerships, and resolve. They attempt to create stand-off through the integration of diplomatic and economic actions, unconventional and information warfare (social media, false narratives, cyber attacks), and the actual or threatened employment of conventional forces.[3] By creating instability within countries and alliances, China and Russia create political separation that results in strategic ambiguity reducing the speed of friendly recognition, decision, and reaction. Through these competitive actions, China and Russia believe they can achieve objectives below the threshold of armed conflict.

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[1] *Hyperactive* means more active than usual or desirable; hyper-competitive during competition and hyper-violent in armed conflict.
[2] Stand-off is the strategic and operational effect Russia, China, and their surrogates are attempting to achieve. It is achieved with both political and military capabilities. Stand-off is the political, temporal, spatial, and functional separation that enables freedom of action in any, some, or all domains, the EMS, and the information environment to achieve strategic and/or operational objectives before an adversary can adequately respond.
[3] Within this document, the term *information warfare* denotes actions taken by an adversary or enemy. The scope and meaning of the term are derived from Russian doctrine. The document refers to friendly actions as *information environment operations*.

c. **China and Russia in armed conflict.** In armed conflict, China and Russia seek to achieve physical stand-off by employing layers of anti-access and area denial systems designed to rapidly inflict unacceptable losses on U.S. and partner military forces and achieve campaign objectives within days, faster than the U.S. can effectively respond. Over the last twenty-five years, China and Russia invested in and developed a systematic approach to "fracture" AirLand Battle by countering the Joint Force's increasingly predictable use of time-phased and domain-federated operational approaches in armed conflict. The resulting anti-access and area denial systems create strategic and operational stand-off that separates the elements of the Joint Force in time, space, and function. Moreover, both China and Russia are continuing to improve these anti-access and area denial systems and are proliferating the associated technologies and techniques to other states. The Joint Force has not kept pace with these developments. It is still designed for operations in relatively uncontested environments that allow for sequential campaigns based on predictable approaches that assume air and naval supremacy: extensive shaping with air and naval strikes before the final destruction of severely degraded enemy forces through joint combined arms operations.

3. **Conducting Multi-Domain Operations.**

a. **Central idea.** Army forces, as an element of the Joint Force, conduct Multi-Domain Operations to prevail in competition; when necessary, Army forces penetrate and dis-integrate enemy anti-access and area denial systems and exploit the resultant freedom of maneuver to achieve strategic objectives (win) and force a return to competition on favorable terms.[4]

b. **Tenets of the Multi-Domain Operations.** The Army solves the problems presented by Chinese and Russian operations in competition and conflict by applying three interrelated tenets: calibrated force posture, multi-domain formations, and convergence. Calibrated force posture is the combination of position and the ability to maneuver across strategic distances. Multi-domain formations possess the capacity, capability, and endurance necessary to operate across multiple domains in contested spaces against a near-peer adversary. Convergence is rapid and continuous integration of capabilities in all domains, the EMS, and information environment that optimizes effects to overmatch the enemy through cross-domain synergy and multiple forms of attack all enabled by mission command and disciplined initiative. The three tenets of the solution are mutually reinforcing and common to all Multi-Domain Operations, though how they are realized will vary by echelon and depend upon the specific operational situation.

c. **Multi-Domain Operations and strategic objectives.** The Joint Force must defeat adversaries and achieve strategic objectives in competition, armed conflict, and in a return to competition. In competition, the Joint Force expands the competitive space through active engagement to counter coercion, unconventional warfare, and information warfare directed against partners.[5] These actions simultaneously deter escalation, defeat attempts by adversaries to "win without fighting," and set conditions for a rapid transition to armed conflict. In armed

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[4] *Dis-integrate* refers to breaking the coherence of the enemy's system by destroying or disrupting its subcomponents (such as command and control means, intelligence collection, critical nodes, etc.) degrading its ability to conduct operations while leading to a rapid collapse of the enemy's capabilities or will to fight. This definition revises the current doctrinal defeat mechanism *disintegrate*.

[5] Expanding the competitive space is a key idea from the 2018 *National Defense Strategy*, and is a logical extension of the 2017 *Joint Concept for Integrated Campaigning*. Expanding the competitive space refers to taking actions to expand options (diplomatic, information, military, economic, etc.) for the political leadership and extending competition in time while also deterring escalation to armed conflict.

conflict, the Joint Force defeats aggression by optimizing effects from across multiple domains at decisive spaces to penetrate the enemy's strategic and operational anti-access and area denial systems, dis-integrate the components of the enemy's military system, and exploit freedom of maneuver necessary to achieve strategic and operational objectives that create conditions favorable to a political outcome. In the return to competition, the Joint Force consolidates gains and deters further conflict to allow the regeneration of forces and the re-establishment of a regional security order aligned with U.S. strategic objectives.

d. **Multi-domain problems and solutions.** To achieve these strategic objectives, the Army, as part of and with the Joint Force and partners, must solve five operational problems:

(1) **How does the Joint Force <u>compete</u> to enable the defeat of an adversary's operations to destabilize the region, deter the escalation of violence, and, should violence escalate, enable a rapid transition to armed conflict?** In the past, the U.S. military, due to cultural, statutory, and policy reasons, has often remained reactive in competition below armed conflict. Successful competition requires Army forces actively engaging across domains (including space and cyberspace), in the EMS, and in the information environment. Army forces enable the Joint Force and interagency to seize and sustain the initiative in competition by deterring conflict on terms favorable to the U.S., defeating an adversary's efforts to expand the competitive space below the threshold of conflict, and setting the conditions to enable the Joint Force's rapid transition to armed conflict. The Army's posture, capabilities (to include necessary authorities), and readiness to execute Multi-Domain Operations deter adversaries from escalation, counter their information and unconventional warfare, undermine their efforts to coerce U.S. partners with the threat of armed conflict, and set conditions in the event of conflict. Denying or restricting the support provided by the adversary's conventional forces to proxies allows U.S. partners to more easily counter attempts to destabilize their countries. The demonstrated capability to prevail in armed conflict counters narratives by adversaries who portray the U.S. as a weak or irresolute partner. These actions combine to create a favorable environment for the Joint Force's rapid transition to armed conflict.

(2) **How does the Joint Force <u>penetrate</u> enemy anti-access and area denial systems throughout the depth of the Support Areas to enable strategic and operational maneuver?** In the event of armed conflict, Army forces immediately penetrate enemy anti-access and area denial systems by neutralizing enemy long-range systems, contesting enemy maneuver forces, and maneuvering from strategic and operational distances. Multi-domain formations converge capabilities with the Joint Force and partners to rapidly strike the enemy's long-range systems. Forward presence forces immediately contest an enemy attack in multiple domains. Forward presence forces also preserve lines of communications by degrading enemy long-range surveillance and reconnaissance and by employing a mixture of deception, dispersion, and protection. The appropriate balance of capabilities across the Total Force provides cohesive, fully capable forward presence forces and expeditionary capabilities able to deploy within strategically relevant time periods.

(3) **How does the Joint Force <u>dis-integrate</u> enemy anti-access and area denial systems in the Deep Areas to enable operational and tactical maneuver?** The Joint Force must dis-integrate the enemy's anti-access and area denial systems to further the defeat of the enemy's

stand-off capabilities, prevent the re-integration of remaining capabilities, and enable freedom of maneuver. Army forces at echelon employ cross-domain fires to defeat the enemy's long-range systems and begin the neutralization of the enemy mid-range systems. Convergence optimizes the employment of capabilities across all domains, the EMS, and the information environment to stimulate, see, and strike the enemy. Convergence also complicates the enemy's attempts to conceal and defend its long- and mid-range systems by providing the Joint Force with multiple options for attacking the enemy's vulnerabilities. Joint, Army, and partner maneuver forces execute operational maneuver and deception to further stimulate enemy mid-range systems and fix or isolate enemy maneuver forces.

(4) **How does the Joint Force <u>exploit</u> the resulting freedom of maneuver to achieve operational and strategic objectives through the defeat of the enemy in the Close and Deep Maneuver Areas?** In the Close and Deep Maneuver Areas, Army forces exploit weaknesses in the enemy's command system and their dependence on air defense and ground fires to complete the defeat of the enemy. Army forces employ deception and convergence with other domains to dislocate the enemy defense by physically, virtually, and cognitively isolating its subordinate elements, allowing friendly forces to achieve overmatch and favorable force ratios. The Joint Force continues dis-integrating tactical anti-access and area denial systems to enable further exploitation until it achieves U.S. campaign objectives.

(5) **How does the Joint Force <u>re-compete</u> to consolidate gains and produce sustainable outcomes, set conditions for long-term deterrence, and adapt to the new security environment?** Army forces consolidate gains and set conditions for a favorable new security environment by maintaining control of key terrain and populations that provide U.S. policymakers with a political advantage. They consolidate gains through three concurrent activities: physically securing terrain and populations for sustainable outcomes; setting conditions for long-term deterrence by regenerating partner and Joint Force capacity and by actively engaging across domains and the information space; and adapting force posture to the new security environment. This provides time for U.S. forces to regenerate regional military structures and continue to provide a credible deterrent.

4. **Implications for the Army.**

a. **Enhanced and broader need for combined arms maneuver.** The emerging operational environment and the challenges posed by China and Russia, particularly their capability to create political and military stand-off, demand that the Joint Force apply the proven principles of combined arms maneuver and massing of effects at decisive spaces. What is different is the idea that Army forces must apply these joint capabilities more comprehensively (earlier, in greater capacity, and at lower echelons) and in new ways (faster and with greater agility). Multi-domain formations provide the Joint Force with additional means to stimulate, see, and strike key components and vulnerabilities within enemy systems. Army forces also continue to conduct the traditional tasks of seizing terrain, destroying enemy forces, and securing friendly populations. Army forces retain the ability to overmatch the enemy, despite reduced friendly capacity, by converging capabilities from across all domains, the EMS, and the information environment.

b. **Operating at echelon.** Army forces execute Multi-Domain Operations with echeloned formations that conduct intelligence, maneuver, and strike activities across all five domains (air, land, maritime, space, and cyberspace) as well as the information environment and the EMS.[6] The ability of Army formations at echelon to converge capabilities in multiple ways and sequences provide the Joint Force Commander with options to impose additional complexity on the enemy. The echeloning of forces prevents the isolation of forward positioned forces within the stand-off range of enemy anti-access and area denial systems at the beginning of a conflict and enables strategic and operational maneuver by forces from outside the range of anti-access and area denial systems. Maneuver at echelon by Army forces then enables the Joint Force to overwhelm Chinese and Russian military systems with multiple dilemmas and massed effects, creating windows of superiority to enable freedom of maneuver.[7]

c. **Converging cross-domain capabilities.** Convergence has two advantages over single-domain alternatives: cross-domain synergy creates overmatch and multiple forms of attack create layered options across domains to enhance friendly operations and impose complexity on the enemy. The ability to converge cross-domain capabilities enables the Joint Force to stimulate, see, and strike vulnerabilities in the Chinese and Russian systems and defeat their efforts to create stand-off.[8] Currently, the Joint Force converges capabilities through the episodic synchronization of domain-federated solutions, but will have to conduct continuous and rapid integration of multi-domain capabilities enabled by mission command and disciplined initiative against near-pear threats in the future.

d. **Maximize human potential.** The Army builds and sustains multi-domain formations through the selection, training, and education of the leaders, Soldiers, and teams in them. Employing multi-domain capabilities requires the Army to attract, retain, and employ leaders and Soldiers who collectively possess a significant breadth and depth of technical and professional expertise. The Army must exercise careful talent management to make the most of these high-quality personnel and integrate them into trusted teams of professionals who are able to thrive in ambiguity and chaos. Improving the resilience of leaders and Soldiers—the Army's most valuable capability—requires training, educating, equipping, and supporting them to execute Multi-Domain Operations in all of its intensity, rigor, and complexity.

e. **Required Army capability sets.** *The U.S. Army in Multi-Domain Operations* concept requires the Army to develop or improve capabilities to contribute cross-domain options within the Joint Force by:

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[6] The *U.S. Army Functional Concept for Movement and Maneuver, 2020-2040* defines cross-domain maneuver as "the employment of mutually supporting lethal and nonlethal capabilities in multiple domains to generate overmatch, present multiple dilemmas to the enemy, and enable Joint Force freedom of movement and action*."*

[7] As an example, Army formations can maneuver—or assist Joint Force maneuver—as a reconnaissance action, fighting to gain intelligence, key terrain, and set conditions that enable strikes, rather than maneuvering only after passive intelligence collection, deliberate analysis, and precision strikes have prepared the battlefield for maneuver.

[8] The *U.S. Army Concept for Multi-Domain Combined Arms at Echelons Above Brigade, 2025-2045* calls for formations able to integrate, synchronize, and converge all elements of combat power across all domains, the EMS, and the information environment to execute cross-domain maneuver; provide essential linkage to the expanded instruments of national power; and operate ubiquitously with joint, interagency, and multinational partners to overmatch any threat in any future environment.

(1) Calibrating force posture geographically and across all the Army components to defeat Chinese and Russian offensive operations in competition and to deter escalation to armed conflict.[9]

(2) Preparing the operational environment by building partner capacity and interoperability and setting the theater through such activities as establishing basing and access rights, prepositioning equipment and supplies, conducting preparatory intelligence activities, and mapping EMS and computer networks.[10] (Supported by Army Materiel Modernization Priorities: Army Network)

(3) Building partners' and allies' capacities and capabilities to defeat increasingly sophisticated Chinese and Russian-sponsored unconventional and information warfare.

(4) Preparing the operational environment for competition and conflict by building understanding of and capabilities in select urban areas of particular operational or strategic importance.

(5) Establishing precision logistics that provides a reliable, agile, and responsive sustainment capability necessary to support rapid power projection, Multi-Domain Operations, and independent maneuver from the Strategic Support Area to the Deep Maneuver Area. (Supported by Army Materiel Modernization Priorities: Future Vertical Lift, Army Network)

(6) Establishing necessary authorities and permissions normally reserved for conflict or to higher echelons to operate in competition and rapidly transition to conflict effectively.

(7) Improving the capability to conduct Multi-Domain Operations in dense urban terrain at all echelons through the development of tactics and capabilities to increase the accuracy, speed, and synchronization of lethal and nonlethal effects. (Supported by Army Materiel Modernization Priorities: Long-Range Precision Fires, Next Generation Combat Vehicle, Army Network, Soldier Lethality)

(8) Supporting a credible U.S. information narrative through cross-domain actions that communicate and counter threats by Chinese and Russian reconnaissance, strike, combined arms, and unconventional warfare capabilities.

(9) Enabling commanders and staffs at each echelon to visualize and command a battle in all domains, the EMS, and the information environment, converging organic and external capabilities at decisive spaces. This requires new tools to more rapidly converge capabilities across the Joint Force, shifting training paradigms, and changing personnel and talent management practices. This also requires that Army formations be trained, manned, and equipped to leverage all available information, from national, joint, commercial, and Service repositories and libraries, or directly from collection assets seamlessly and in a time dominant

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[9] The idea of calibrating and re-calibrating force posture globally aligns with the idea of "forming operationally coherent forces" as described in the Joint Concept for Rapid Aggregation.

[10] "Setting the theater" encompasses the actions to establish and maintain conditions to seize the initiative and retain freedom of action for a specific theater. These actions may occur outside of the theater as well.

manner. (Supported by Army Materiel Modernization Priorities: Army Network, Soldier Lethality, Synthetic Training Environment)

(10) Providing to the Joint Force Commander multi-domain formations and systems that can converge capabilities to attack specific vulnerabilities in Chinese and Russian multi-layered, mutually reinforcing military forces and systems. This means creating commanders and staffs who have the means and ability to access and employ capabilities that reside across the Joint Force. (Supported by Army Materiel Modernization Priorities: Long-Range Precision Fires, Next Generation Combat Vehicles, Future Vertical Lift, Soldier Lethality)

(11) Providing to the Joint Force Commander with multi-domain formations that have systems, leaders, and Soldiers that are durable, can operate in a highly contested operational environment, cannot easily be isolated from the rest of the Joint Force or from partners, and are able to conduct independent maneuver and employ cross-domain fires. This requires extended sustainability of systems and formations, and leaders and Soldiers who continue to operate effectively in austere environments and conditions. (Supported by Army Materiel Modernization Priorities: Long-Range Precision Fires, Next Generation Combat Vehicles, Future Vertical Lift, Army Network, Air and Missile Defense, Soldier Lethality)

(12) Consolidating gains through clear demonstrations of U.S. security commitments to partners through combined exercises, training, information exchanges, and other presence activities.

(13) Enabling and complementing land, air, and maritime capabilities with operations in space, cyberspace, and the EMS to support the opening of and exploitation of windows of superiority that create dilemmas for the enemy while protecting the ability to conduct friendly operations in degraded, disrupted, and/or denied operational environments.

(14) Attracting, retaining, and making maximum use of high-quality, physically fit, mentally tough Soldiers who have the skills and expertise to conduct Multi-Domain Operations.

f. Success in Multi-Domain Operations requires these capabilities be sufficiently developed, trained, and practiced within the Army, with the remainder of the Joint Force, and with allies and partners.

Department of the Army	***TRADOC Pamphlet 525-3-1**
Headquarters, United States Army	
Training and Doctrine Command	
Fort Eustis, VA 23604	

27 November 2018

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Military Operations

THE U.S. ARMY IN MULTI-DOMAIN OPERATIONS 2028

</div>

STEPHEN J. TOWNSEND
General, U.S. Army
Commanding

WILLIAM T. LASHER
Senior Executive
Deputy Chief of Staff, G-6

History. This is a major revision of the U.S. Army Training and Doctrine Command (TRADOC) Pamphlet 525-3-1. It replaces *The U.S. Army Operating Concept: Win in a Complex World*, and the *Multi-Domain Battle: Evolution of Combined Arms for the 21st Century* concept.

Summary. This pamphlet describes how Army forces contribute to the Joint Force's principal task as defined in the unclassified *Summary of the National Defense Strategy:* deter and defeat Chinese and Russian aggression in both competition and conflict.

Applicability. This document applies to all Department of the Army (DA) activities that develop doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) capabilities. It guides future force development and informs the Joint Capabilities Integration and Development System process. It also supports Army capabilities development processes and functions as a conceptual basis for developing supporting concepts related to the future force within DOTMLPF.

Proponent: The proponent of this document is the Director, Concept Development and Learning Directorate, Army Capabilities Integration Center (ATFC-ED), 950 Jefferson Avenue, Fort Eustis, VA 23604-5763.

TRADOC Pamphlet 525-3-1

Suggested improvements. Users are invited to submit comments and suggested improvements. Comments may be provided via DA Form 2028 to Director, ARCIC (ATFC-ED), 950 Jefferson Avenue, Fort Eustis, Virginia 23604-5763.

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Summary of Change

TRADOC Pamphlet 525-3-1
The U.S. Army in Multi-Domain Operations 2028

This major revision, dated 27 November 2018-

o Describes how Army forces contribute the Joint Force's principal task to deter and defeat Chinese and Russian aggression in both competition and armed conflict as outlined in the unclassified *Summary of the National Defense Strategy.*

o Provides a threat-based approach to operations against near-peer adversaries.

o Addresses operations in competition, armed conflict, and the transition back to competition (return to competition).

o Describes how Army forces fight across all domains, the electromagnetic spectrum, and the information environment and at echelon.

o Introduces or revises the terms: Multi-Domain Operations, calibrated force posture, convergence, multi-domain formations, decisive space, independent maneuver, dense urban terrain, dis-integrate, information space, stand-off, and precision logistics.

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Chapter 1
Introduction

1-1. Purpose
United States (U.S.) Army Training and Doctrine Command (TRADOC) Pamphlet 525-3-1, *The U.S. Army in Multi-Domain Operations* describes how Army forces contribute to the Joint Force's principal task as defined in the unclassified *Summary of the National Defense Strategy:* deter and defeat Chinese and Russian aggression in both competition and conflict.[11] *The U.S. Army in Multi-Domain Operations* proposes detailed solutions to the specific problems posed by the militaries of post-industrial, information-based states like China and Russia. Although this concept focuses on China and Russia, the ideas also apply to other threats. The concept describes the Army in 2028, though some of the capabilities described might not be fully fielded across the entire force by that time.

1-2. Methodology and organization
The *U.S. Army Multi-Domain Operations* concept describes how Army forces fight across all domains, the electromagnetic spectrum (EMS), and the information environment and at echelon. The concept is based on extensive analyses, wargaming, experimentation, and collaboration with other Services and the Joint Staff. Chapter 2 describes the characteristics, capabilities, and vulnerabilities of Chinese and Russian anti-access and area denial systems in competition and in conflict. Chapter 3 describes the military problem, gives a detailed description of the tenets of Multi-Domain Operations (MDO), and then provides detailed descriptions of their application to solve the five multi-domain problems. Chapter 4 summarizes the immediate implications of MDO and describes the path of future concept development.

1-3. Major changes from Multi-Domain Battle

a. Title changed to *The U.S. Army in Multi-Domain Operations* to better reflect the broader scope of competition and conflict and the inherently joint nature of modern warfare.

b. Insights from the U.S. Army Mosul Study and North Atlantic Treaty Organization (NATO) Urbanization Project informed revisions to the description of the emerging operational environment, refinements to the solution, and a new dense urban terrain appendix.

c. Insights gained from wargames, simulations, Joint Warfighting Assessments, and joint and multi-Service collaboration are incorporated into refined descriptions of Chinese and Russian systems, tenets of MDO, and required capabilities.

d. Provides much greater detail regarding the application of MDO as a basis for functional concept development, further experimentation, and force development.

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[11] The *U.S. Army in Multi-Domain Operations, 2028* concept is a single Service concept and therefore refers to "Army forces," even in instances when "ground forces" could also be used because U.S. Marine Corps units would operate differently within their Service structures. Similarly, "Army forces" is also used in instances describing the use of space, cyberspace, electronic warfare, intelligence, surveillance, and reconnaissance capabilities that are possessed by one or more of the other Services, but because the Services organize and operate differently, limits the description to Army forces. This concept reinforces the requirement for multi-Service and joint operations in new ways without prescribing roles, functions, and organization for the other Services or partners. The concept strengthens the idea that the Army will operate as an element of the Joint Force in the execution of Multi-Domain Operations.

Chapter 2
The Operational Context

2-1. The emerging operational environment

a. The *Joint Operating Environment 2035* predicts that for the foreseeable future, U.S. national interests will face challenges from both persistent disorder and states contesting international norms.[12] This concept addresses the second of those challenges. As the Joint Force responds to adversaries contesting international norms in either competition or armed conflict, it will conduct operations in an emerging operational environment shaped by four interrelated characteristics: adversaries are contesting all domains, the EMS, and the information environment and U.S. dominance is not assured; smaller armies fight on an expanded battlefield that is increasingly lethal and hyperactive; nation-states have more difficulty in imposing their will within a politically, culturally, technologically, and strategically complex environment; and near-peer states more readily compete below armed conflict, making deterrence more challenging. These characteristics allow adversaries, particularly near-peer threats like China and Russia, to expand the battlefield in time (a blurred distinction between peace and war), in domains (space and cyberspace), and in geography (now extended into the homeland) to create tactical, operational, and strategic stand-off.

b. An additional important characteristic of the emerging operational environment is its urban nature. The strategic importance of cities suggests that Army forces will have to conduct operations within dense urban terrain.[13] The physical and demographic density of this environment creates distinct physical, cognitive, and operational characteristics. The cumulative effect of these factors compounds the friction of war by increasing the number of tasks required within a given physical or temporal space while multiplying the tactical, operational, and strategic variables that commanders and staffs must take into account. Operations in dense urban terrain might be in response to either persistent disorder or to contested norms. In the latter case, adversaries will exploit dense urban terrain to gain advantage or to mitigate the Joint Force's strengths.[14]

c. Among the states most likely to contest international norms, China and Russia prove the most capable. They are, therefore, the focus of this concept. As described below, both China and Russia are pursuing capabilities and approaches to create the same effect of operational and strategic stand-off, though by somewhat different means. This concept assumes—for the purposes of organizing a strategic and operational construct—that Chinese and Russia concept and force development are sufficiently similar for the Army to solve the problems presented by Russia in the near- to mid-term and adapt to the changes China develops in the mid- to far-term.

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[12] Contested norms involve increasingly powerful revisionist states and select non-state actors using all elements of power to establish their own set of rules unfavorable to the U.S. and its interests. Persistent disorder is characterized by an array of weak states that become increasingly incapable of maintaining domestic order or good governance. Publications supporting this assessment include the *Joint Operating Environment 2035*; Worldwide Threat Assessment of the U.S. Intelligence Community, Senate Select Committee on Intelligence, Feb 2016; Military and Security Developments Involving the People's Republic of China 2015, Annual Report to Congress; and David E. Johnson, *The Challenges of the "Now" and Their Implications for the U.S. Army* (Santa Monica, Calif: RAND Corporation, 2016).

[13] Dense urban terrain is "areas characterized by extraordinarily closely-packed manmade infrastructure and high population density, potentially including concentrations of high-rise buildings, subterranean features, and densely packed slums." There is no formal doctrinal term; both dense urban terrain and dense urban environments are used synonymously. For purposes of this concept, dense urban terrain is used.

[14] Appendix D provides a more comprehensive description of Multi-Domain Operations in dense urban terrain.

This document, therefore, accounts for both China and Russia's approaches to create stand-off, but uses Russia as the present pacing threat for technical and tactical purposes.[15]

(1) Russia has demonstrated the intent and the most effective combinations of systems and concepts to challenge the U.S. and its allies militarily in the near term. Russia's actions in Georgia, Ukraine, and Syria have demonstrated their intent to fracture the relationship between the U.S. and its partners and their ability to pursue strategic objectives below the threshold of armed conflict. Russia uses unconventional and information warfare to propagate a narrative that breeds ambiguity and delays the reactions of their adversaries. Over the last decade, Russia has increased its investments in anti-access and area denial capabilities and systems intended to deny the Joint Force entry into a contested area and set the conditions for a *fait accompli* attack.

(2) China possesses the vision and strategic depth to become the U.S.'s most powerful competitor in time. Unlike Russia, China has the economy and technological base, such as an independent microelectronics industry and world-leading artificial intelligence development process, sufficient to overtake current Russian system overmatch in the next 10-15 years. China is rapidly building a world class military intended to project power globally. In the future, China will become the conceptual pacing threat for the Joint Force. The risk associated with this assumption will be continuously assessed to ensure the ability to adapt conceptually should China accelerate its capability development.

d. Chinese and Russian attempts to create political and military stand-off challenge the Joint Force's ability to dominate all domains, the EMS, and the information environment. If successful, stand-off grants these near-peer competitors the strategic freedom of action to pursue objectives at the expense of the U.S. and its allies.[16] They, in conjunction with aligned state and non-state actors, will increasingly challenge the global order by undermining U.S. security guarantees to allies and partners. Vulnerable fault-line states are the principal targets of Chinese and Russian offensive operations short of armed conflict, which are calculated to avoid triggering a decisive U.S. response. China and Russia's ability to escalate through a rapid transition to overt military action provides them the means to seize and maintain the initiative before U.S. and partner forces can prepare a response.

e. Within this emerging operational environment, China and Russia employ a variety of political and military anti-access and area denial strategies and systems to create stand-off in competition and conflict. In competition, both states seek to fracture U.S. alliances and partnerships through a combination of diplomatic and economic actions; unconventional warfare; information warfare; exploitation of social, ethnic, or nationalistic tensions in a region; and the actual or threatened employment of conventional forces. By generating instability within countries and alliances, they create political separation that results in strategic ambiguity, reducing the speed of friendly recognition, decision, and reaction. In armed conflict, China and Russia employ anti-access and area denial systems to create strategic and operational stand-off to separate elements of the Joint Force in time, space, and function.

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[15] Both China and Russia require individual, classified tactical and operational battlefield development plans for solution development, analysis, and requirements determination. These plans are under development; they have and will continue to inform *Multi-Domain Operations*.
[16] The National Defense Strategy describes Russian and China as competitors and states that "Long-term strategic competitions with China and Russia are the principal priorities for the Department [of Defense]," *Unclassified Summary of the National Defense Strategy*, pg. 1, 4

f. The emerging operational environment and the threat necessitate adapting the Joint Force's current understanding of the battlefield. Adversaries have expanded the battlefield in four ways: in time (phases), domains, geography (space and depth), and actors. They have blurred the distinctions between actions "below armed conflict" and "conflict," enabling the achievement of strategic objectives short of what the U.S. traditionally considers "war." They have expanded the battlefield by making space, cyberspace, electronic warfare, and information key components of their operations. Potential adversaries have also expanded the battlefield geographically because the effects of their multi-domain capabilities are less bound by geographic and time constraints and extend the range in which formations are under "contact." Finally, they rely on an increasing number of "non-traditional" actors, including proxies and surrogates, to pursue their objectives.

g. The framework depicted in figure 2-1 illustrates the breadth of activities, spaces, distances, and interrelationships for which MDO must account. This concept uses this framework throughout to illustrate friendly as well as an adversary's actions in and across spaces. Despite the linear depiction in figure 2-1, the areas are not defined by fixed geographic relationships or dimensions but by the operational context, the interplay of friendly and enemy capabilities, and terrain. The areas are not self-contained. Instead, the principal utility of the framework is that it allows commanders and staffs to visualize the relationships between actions that take place across the depth of the expanded battlefield. A more detailed description of the framework is found in appendix C.
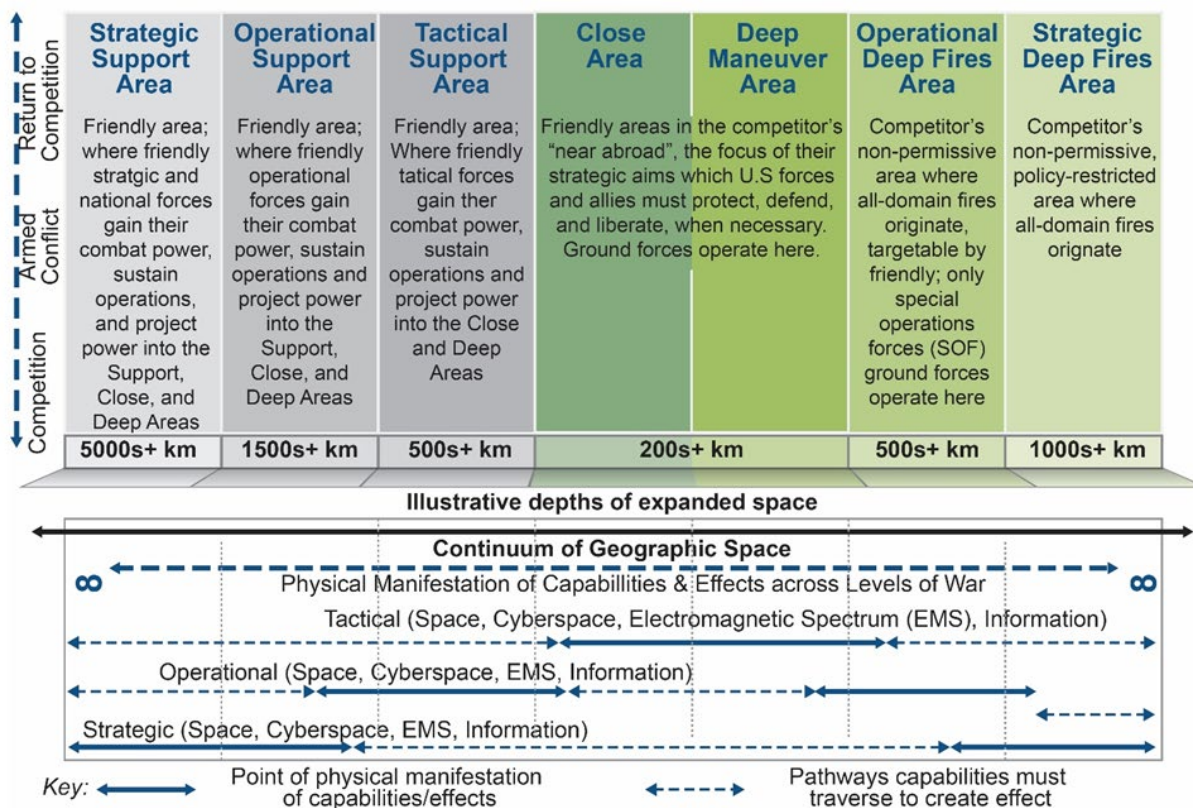

Figure 2-1. MDO framework

2-2. Russia: Achieve objectives in competition below armed conflict.[17]

a. In competition, Russia attempts to separate the U.S. and friendly states politically, limiting a coordinated allied response and destabilizing target states. To accomplish this task, Russia executes coordinated campaigns employing national- and district-level capabilities, information warfare (social media, false narratives, cyber attacks), and unconventional warfare to achieve strategic objectives. Russia leverages the presence and posture of conventional forces to both actively support these efforts and demonstrate the capability to rapidly transition to armed conflict (e.g., "snap drills"). This posture also provides Russia with an escalation advantage, because their conventional forces threaten the Joint Force's freedom of action in the air and space and its ability to conduct expeditionary maneuver (see figure 2-2).[18] Through these competitive actions, Russia seeks to achieve objectives without risking armed conflict with the U.S.
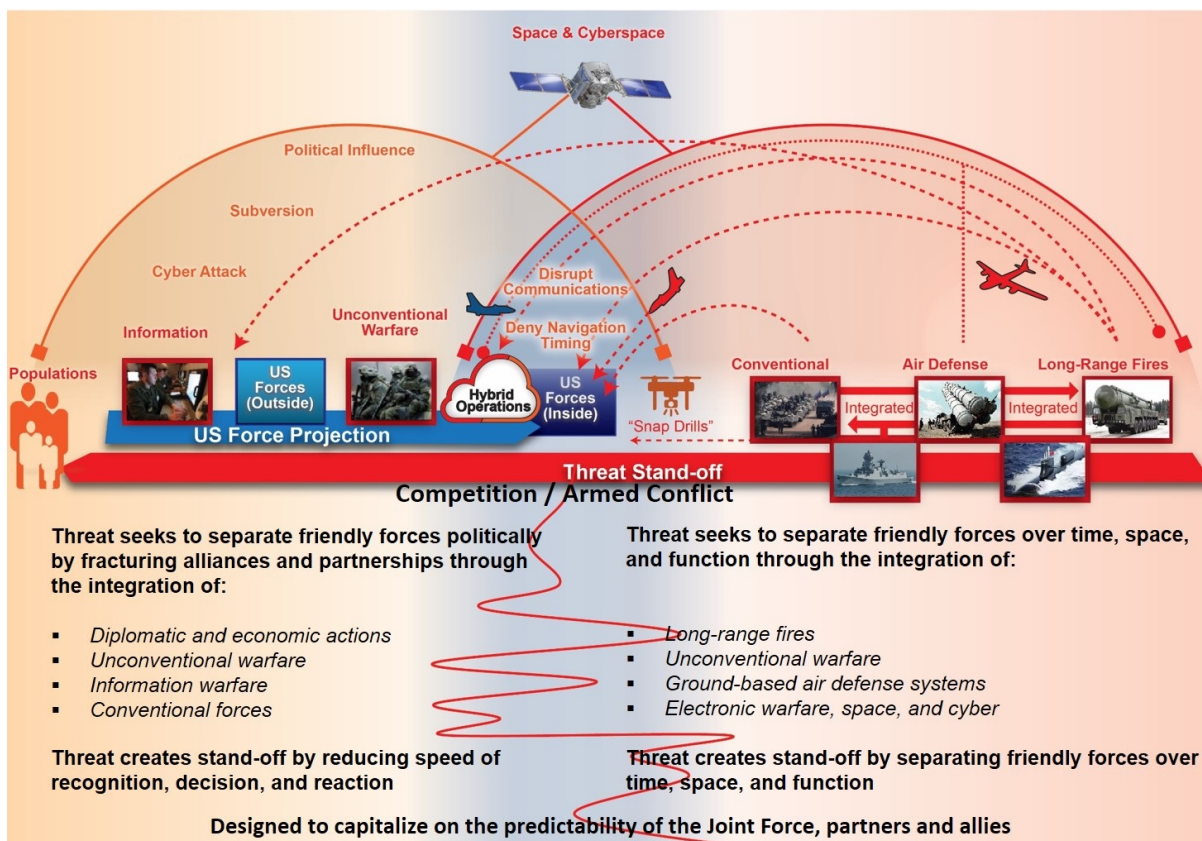
Figure 2-2. China and Russia in competition and armed conflict

b. **National- and district-level capabilities**. Russian national- and district-level capabilities hold the U.S. homeland at risk and threaten expeditionary maneuver.

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[17] Sections 2-2, 2-3, and 2-4 describe how Russian forces (the pacing threat) operate. It is assumed that China and other Chinese and Russian proxies operate with characteristics sufficiently similar to use Russian operations as a basis for analysis.

[18] An escalation advantage is essentially a dynamic position of relative advantage, generally achieved by conventional forces.

(1) Russian national-level intelligence, surveillance, and reconnaissance (ISR) assets collect targeting information on fixed sites (headquarters, communications, critical infrastructure, and power projection facilities), detect predictable friendly patterns of operations, and monitor changes to friendly force posture. Space-based reconnaissance, special operations forces (SOF) and sympathizers, open-source collection, ground-based signal intercept platforms, and the communications network linking these sensors to headquarters are the most important ISR capabilities retained at the national and military district levels. Nuclear and other weapons of mass effect (to include widespread cyberspace attacks) threaten the U.S. homeland, allies and partners, and friendly military forces.

(2) Russia conducts active, persistent surveillance of adjoining states, regional allies, and the U.S. homeland. They focus on U.S. capabilities that enable a rapid response, such as Joint Force intelligence collection and transmission, air superiority control and sustainment, and power projection facilities. Russian surveillance enables long-range strikes with ballistic missiles, cruise missiles, offensive cyber, and SOF direct action teams. These strike capabilities support their information narrative in competition by assisting them in controlling escalation on their terms. National- and district-level ISR capabilities enable Russia to determine whether they have achieved the necessary correlation of forces to continue offensive operations in competition. Comprehensive ISR by national- and district-level assets in competition also enables their conventional forces to transition rapidly to armed conflict.

c. **Unconventional warfare.** Russian SOF, local paramilitaries, and activists conduct unconventional warfare to destabilize targeted governments by separating their control of certain regions or populations. Russian unconventional warfare activities empower proxies and activist networks to conduct a range of operations, including terrorism, subversion, destabilizing criminal activities, reconnaissance, information warfare, and direct action strikes. These actions add physical support to their information narrative. Unconventional warfare capabilities support conventional forces with reconnaissance and the ability to exert influence or control over some elements of terrain and populations within U.S. partner territory.

d. **Information warfare.**[19] Russian information warfare is composed of the information narrative and information warfare capabilities. Information warfare works with, and is supported by, their national-level capabilities and unconventional and conventional warfare activities.[20] Adversaries seek to influence both domestic and foreign audiences.[21] Information warfare often involves cyber reconnaissance and strike actions that support other reconnaissance, unconventional, and conventional warfare activities. Information warfare can be destructive, using offensive cyber capabilities to disable, monitor, or spoof friendly and civilian command networks. An increasingly prevalent form of information warfare is the "firehose of falsehood"—fabricated stories distributed by paid "trolls" or automated "bots" that unsuspecting citizens amplify through social media or other means—to confuse audiences or divert attention

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[19] This concept refers to an adversary's actions by the Russian doctrinal term *information warfare* and friendly actions by the term *information environment operations*. For Russia, information warfare embodies their plans for information confrontation that includes targeting all aspects of a society—diplomatic, economic, military, political, cultural, social, and religious information arenas. (http://freebeacon.com/national-security/dia-reveals-new-details-russian-information-warfare/)
[20] Russian information warfare capabilities are largely cyber.
[21] An information warfare (or information environment operation for friendly usage) campaign employs various information related capabilities working together toward a common strategic or operational objective.

from adversaries' intentions.[22] This form of information warfare creates ambiguity to prevent or delay political recognition, decision, and reaction.

e. **Conventional forces.** Russia postures conventional forces in competition to create a favorable correlation of forces in regard to the Joint Force and its partners. Exercises, demonstrations, and "snap drills" generate force readiness and stimulate friendly response patterns for their national- and district-level ISR capabilities to collect and analyze. Russian conventional forces possess the demonstrated ability to conduct a *fait accompli* attack with limited warning.[23] Russian surface-to-surface missiles, long-range surface-to-air missiles (SAM), counterspace, and combined arms ground forces are in position to physically isolate U.S. partners and destroy forward-positioned defenders before the Joint Force can respond effectively. This local military superiority supports information narratives of Russian strength and postures their conventional forces to support unconventional warfare directly through covert assistance or indirectly by providing them with an escalation advantage that constrains friendly responses.

f. **Summary of Russian systems in competition.** The operational center of gravity for Russian actions in competition is the close integration of information warfare, unconventional warfare, and conventional forces. The ability to employ all elements in a coordinated manner provides Russia with an escalation advantage, in which any friendly reaction risks a more powerful response. Within competition, the most extreme escalation is the transition to armed conflict, which favors an adversary with the ability to conduct a *fait accompli* attack with their conventional forces. The demonstrated ability to accomplish a *fait accompli* provides credibility to Russian information narratives. The combination of information warfare, unconventional warfare, and conventional and nuclear forces provides Russia with political and military stand-off within which they can secure strategic objectives short of armed conflict with the U.S. Information warfare and unconventional warfare contribute to the destabilization of regional security, but are insufficient in themselves to achieve all Russian strategic objectives. The escalation advantage provided by conventional forces supplements information warfare and unconventional warfare, enabling Russia to maintain the initiative in competition.

2-3. Russia in armed conflict: Separate the Joint Force and create strategic and operational stand-off

a. Russian conventional forces seek to further enhance physical stand-off by creating layers of anti-access and area denial systems designed to inflict unacceptable losses on U.S. and partner military forces and to achieve campaign objectives within days, before the U.S. can effectively respond. These forces are enabled by all-domain reconnaissance that operates in depth, from as deep as the U.S. homeland to the area of operations. Empowered by extensive reconnaissance complexes, these threats can conduct simultaneous attacks throughout the depth of the battlefield. Russian systems are designed to separate the Joint Force in time, space, and function by employing long-range systems to prevent friendly expeditionary maneuver from strategic and operational distances, and by employing direct and indirect fires from mid- and short-range systems to isolate and destroy forward deployed friendly forces.

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[22] Christopher Paul and Miriam Matthews, *The Russian "Firehose of Falsehood" Propaganda Model* (Santa Monica, Calif.: RAND Corporation, 2016).
[23] A *fait accompli* attack is intended to achieve military and political objectives rapidly and then to quickly consolidate those gains so that any attempt to reverse the action by the U.S. would entail unacceptable cost and risk.
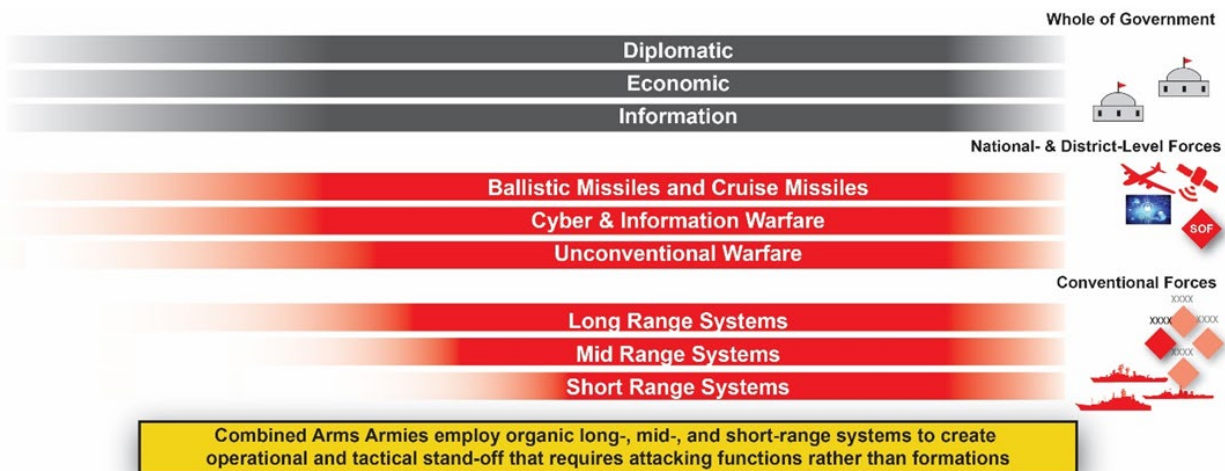
Figure 2-3. Adversary's layered stand-off

b. **Long-range fires systems.**

(1) Within Russian combined arms ground formations, long-range fires systems are carefully concealed from friendly ISR and well-protected by layered air defenses. In a continental theater, short-range ballistic missiles (SRBMs) and long-range SAM are the critical elements creating military stand-off, and are supplemented by long-range multiple rocket launchers (MRL), offensive cyber, counterspace, and unconventional warfare. Enemy long-range systems use intelligence gathered by SOF and espionage networks, space-based systems, unmanned aircraft systems (UAS), and ground-based sensors.

(2) The range of Russian long-range systems expands the battlefield into Support Areas. In conflict, the enemy will target U.S. command and sustainment capabilities to degrade friendly air and maritime superiority and reconnaissance, strike, and strategic lift.[24] Long-range kinetic strike capabilities will also target Army forward postured forces, prepositioned equipment, and munitions stocks. Russian offensive electronic warfare (EW), counterspace, and offensive cyber capabilities will jam, spoof, exploit, or destroy friendly space-based reconnaissance and communications platforms to prevent effective friendly mission command and ISR. Enemy long-range strike capabilities will also be used against civilian infrastructure and resources that support military operations, such as transportation networks, energy generation and distribution systems, and the defense industrial base.

c. **Mid-range and short-range systems.**

(1) Within Russian combined arms ground formations, mid-range systems provide the majority of fires. Advanced mid-range radars and SAM, capable of integration with long-range systems, pose a significant threat to friendly air forces. The weight of fire produced by standard MRL and cannon artillery employed in mass present the greatest danger to friendly ground forces, which can be destroyed before closing with enemy maneuver forces. Networked multi-

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[24] Destroying integrated air defense systems (IADS) to facilitate deep strikes, isolating enemy maneuver forces, and opening the theater for friendly strategic movement are the critical initial premises of current Joint Force operations.

domain reconnaissance forces deployed in depth enable enemy mid-range fires. These forces consist of numerous ground observation teams, unmanned aerial systems, radars, and signal intercept units. Additionally, the enemy can commit offensive cyber, SOF, space-based, air strike, and maritime capabilities to reinforce combined arms ground maneuver formations when they are the main effort. Mid- and short-range air defenses severely limit friendly air surveillance capabilities, air assault, attack aviation, and close air support by forcing them to either operate at increased risk locally or with reduced effectiveness from stand-off ranges.

(2) Within the stand-off created by mid-range systems, enemy short-range systems (ground maneuver forces) maneuver to occupy key terrain, and create defensive positions that protect both the enemy long- and mid-range fires systems. In the offense, enemy short-range systems are designed to find and fix friendly forces to be destroyed by their long- and mid-range fires. Once in defensive positions, Russian combined arms ground formations employ camouflage, concealment, and decoys to defeat Joint Force surveillance and reconnaissance.

d. **Unconventional warfare.** Unconventional warfare activities support Russian conventional forces in armed conflict with reconnaissance, direct action strikes, and support in consolidating gains. Unconventional warfare capabilities play an important role in attacking friendly Support Areas by performing reconnaissance and direct action.

e. **Information warfare.** The actions of Russian conventional, national- and district-level capabilities, and unconventional warfare enable and empower its information narrative. The information narrative targets friendly leaders, populations, and forces. The effectiveness of the Russian information narrative in undermining friendly will is enhanced greatly by the success of its conventional forces.

f. **National- and district-level capabilities.** National- and district-level capabilities support Russian conventional forces in armed conflict by performing reconnaissance, disrupting the Joint Force's strategic and operational maneuver, and preventing a deliberate counteroffensive. Nuclear forces, information warfare, cyber capabilities, cruise missiles, space-based platforms, and special operations teams provide Russia a variety of options to threaten U.S. and partner homelands outside of the range of most conventional forces. Russia uses (or threatens to use) these capabilities to isolate the theater and to transition to consolidation operations after its conventional forces have accomplished objectives.

g. **Summary of Russian systems in conflict.** Russian long- and mid-range fires systems are its operational center of gravity in armed conflict. These systems create stand-off that enables a successful *fait accompli* attack. Russia employs these systems to destroy friendly forces' high-value capabilities, including headquarters, aircraft, and trained combat formations that are difficult to regenerate and essential to achieving U.S. operational and strategic objectives. Destroying these friendly high-value capabilities strengthens Russian information narratives and creates time and space to consolidate operational gains on political terms favorable to Russia.

2-4. Russia's consolidation operations in competition, armed conflict, and return to competition

a. Russian forces begin consolidation operations during armed conflict and continue these into the return to competition. During consolidation operations, Russia regenerates and re-postures military capacity while preserving any political gains achieved in conflict. If consolidation operations occur in a situation in which the Joint Force and partners have achieved a military advantage, the use or threat of Russian nuclear systems becomes an important element in maintaining its gains.

b. The information narrative is the main effort in Russian consolidation operations during the return to competition. The information narrative legitimizes gains while projecting the image of sustained military strength. In a supporting effort, unconventional warfare, conventional forces, and security forces extend control in enemy territory, eliminating dissent and blocking friendly information narratives from reaching the population or its own forces. Remaining Russian reconnaissance capabilities continue to operate in U.S. and partner territories. Russian ground forces enable its control over territory by destroying any friendly SOF and irregular capabilities.

c. Weapons of mass effect provide military stand-off during the return to competition, which allow Russia to regenerate and reposition military capabilities and consolidate gains. The combination of weapons of mass effect, information warfare, unconventional warfare, and proxies allows Russia to continue contesting the Joint Force in the return to competition, even if its conventional forces are severely degraded. This stand-off creates time and space for defeated enemy forces to reorganize and limits the extent to which the Joint Force can exploit operational military advantage.

2-5. Systemic vulnerabilities and dependencies

a. Russia's military exhibits patterns and vulnerabilities that can be exploited by changes to Joint Force operations, force posture, and capabilities. Russia:

(1) Uses information warfare (enabled by cyber) and conventional military forces in ways that, when exposed, galvanize rather than separate the U.S. and its allies.

(2) Organizes and operates forces through highly centralized command and control structures that have difficulty adapting to rapid tactical changes or complexity.

(3) Cannot accept high attrition to elite formations or key integrated air defense systems (IADS) and fires systems.

(4) Depends on achieving air superiority from the ground to protect its fires systems.

(5) Relies on a limited number of long-range strike systems and enabling munitions.

(6) Operates in territory and among populations in part or wholly friendly to the U.S.; therefore, the revisionist power faces constrained freedom of access in competition and will be contested in conflict.

(7) Possesses limited ability to reconstitute space-based assets.

b. The Chinese and Russian militaries are powerful, but they also have vulnerabilities that MDO seek to exploit. Both China and Russia are fielding mutually supporting systems designed to be effective against the well-understood patterns, posture, and capabilities of the current Joint Force. Altering Joint Force operational patterns and force posture will mitigate existing capacity and capability gaps and create opportunities to exploit Chinese and Russian operational shortfalls. The militaries of China and Russia have and will continue to have finite capacity of critical capabilities. The Joint Force's demonstrated capability to destroy or defeat these critical capabilities would prevent China and Russia from accomplishing objectives in competition, succeeding in armed conflict, or effectively transitioning to consolidation operations.

2-6. Other threats in the operational environment
The *U.S. Army in Multi-Domain Operations* concept applies to threats other than China and Russia. North Korea and Iran also seek to create political and military stand-off in order to achieve their strategic goals by destabilizing regional security. In some instances, North Korea and Iran directly employ or further proliferate Chinese and Russian anti-access and area denial capabilities to create military stand-off. Additionally, these countries employ indigenously developed capabilities or strategies to create stand-off. The Joint Force, therefore will also employ MDO adapted for the unique cultural, geographic, and military context against these and other future threats.

2-7. Implications for Multi-Domain Operations (MDO)
The common aspect among the current and emerging threats described in this chapter is the intent and capability to challenge the U.S. by employing a variety of means to generate stand-off that exploits political ambiguity and the strategic posture and operational predictability of the Joint Force. The current conceptual framework of the Joint Force and the Army does not account for the problem of stand-off, nor does it acknowledge the need to compete below the threshold of armed conflict against a near-peer adversary to expand the competitive space for policymakers. Countering these threats will require an operational concept that integrates capabilities from all domains, the EMS, and the information environment to offer solutions to a wide array of problems in both competition and armed conflict.

Chapter 3
Conducting MDO

3-1. Military problem

a. How does the Army enable the Joint Force to compete with China and Russia below armed conflict, penetrate and dis-integrate their anti-access and area denial systems and ultimately defeat them in armed conflict and consolidate gains, and then return to competition?

b. Solving the overarching military problem requires Army forces to address five problems posed by China and Russia in competition and conflict (see figure 3-1).

#1 How does the Joint Force <u>compete</u> to enable the defeat of an adversary's operations to destabilize the region, deter the escalation of violence, and, should violence escalate, enable a rapid transition to armed conflict?

#2 How does the Joint Force <u>penetrate</u> enemy anti-access and area denial systems throughout the depth of the Support Areas to enable strategic and operational maneuver?

#3 How does the Joint Force <u>dis-integrate</u> enemy anti-access and area denial systems in the Deep Areas to enable operational and tactical maneuver?

#4 How does the Joint Force <u>exploit</u> the resulting freedom of maneuver to achieve operational and strategic objectives through the defeat of the enemy in the Close and Deep Maneuver Areas?

#5 How does the Joint Force <u>re-compete</u> to consolidate gains and produce sustainable outcomes, set conditions for long-term deterrence, and adapt to the new security environment?
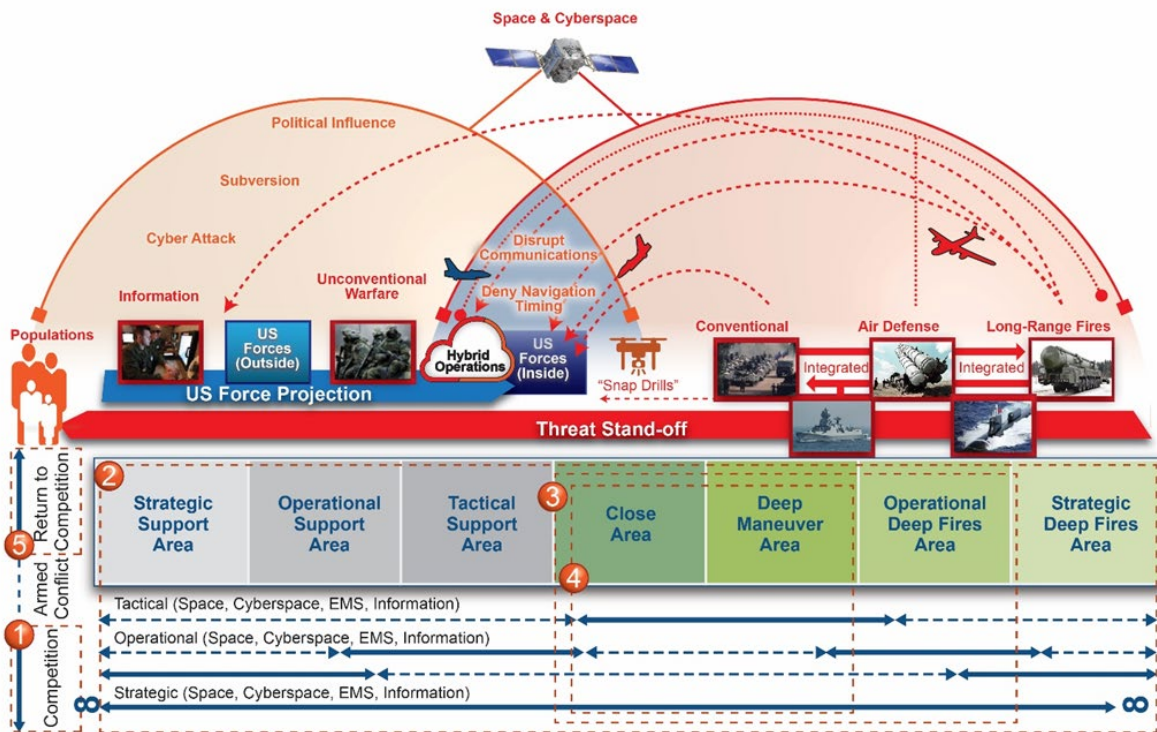

Figure 3-1. Problems superimposed on the MDO framework

3-2. Central idea

Army forces, as an element of the Joint Force, conduct MDO to prevail in competition; when necessary, Army forces penetrate and dis-integrate enemy anti-access and area denial systems and exploit the resultant freedom of maneuver to achieve strategic objectives (win) and force a return to competition on favorable terms.

3-3. Tenets of MDO

a. MDO solves the five problems through the combined application of three tenets: calibrated force posture, multi-domain formations, and convergence.[25] The tenets are mutually reinforcing and common to all MDO, though how they are realized will vary by echelon and depend upon the specific operational situation. The employment of the tenets – particularly calibrated force posture and convergence – also enable the global integration of the Joint Force to counter China and Russia during competition and armed conflict.

b. **Calibrated force posture.** Calibrated force posture is the combination of capacity, capability, position, and the ability to maneuver across strategic distances. Calibrated force posture allows Army forces to support Joint Force objectives in competition; deters armed conflict by preventing adversaries from attempting a *fait accompli* attack on favorable terms; and enables friendly forces to quickly seize the initiative in large-scale combat operations by setting the theater for expeditionary forces. Accomplishing these tasks requires a dynamic mix of different types of forces that adapt and change as dictated by the strategic environment: forward presence forces (U.S. and partner, conventional and SOF), expeditionary forces (Army and joint units and capabilities), and national-level cyberspace capabilities, space-based platforms, and strike capabilities. The appropriate balance of capabilities across the Total Force provides cohesive, fully capable forward presence forces and expeditionary forces able to deploy within strategically relevant time periods. Those postured forces also require the appropriate authorities to operate in all domains, the EMS, and the information environment, particularly in competition. The ability of the Joint Force to rapidly and unpredictably present an adversary with different combinations of forces and capabilities expands the competitive space for the U.S. and helps deter aggression by complicating an adversary's ability to achieve local superiority. In the event of a conflict, the application of calibrated force posture positions the right mix of ready forces and capabilities so they can rapidly transition to combat operations, penetrate and dis-integrate enemy anti-access and area denial systems within days, and exploit the resultant freedom of maneuver to defeat the enemy within weeks rather than months.[26]

(1) **Forward presence forces.** Forward presence forces consist of Army forward deployed and rotational units and capability sets. Forward presence forces include a wide array of Army capabilities, but of particular value due to their role in competition and the transition to armed conflict are mission command, intelligence, fires, sustainment, security force assistance, civil affairs, psychological operations, and SOF. Forward presence forces also provide enhanced

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[25] The components of the solution link to the National Defense Strategy goals for developing a more lethal force: "Forward force maneuver and posture resilience" and "Develop a lethal, agile, and resilient force posture and employment," *Unclassified Summary of the National Defense Strategy*, pg. 6, 7.

[26] Calibrated force posture aligns with the Global Operating Model described in the National Defense Strategy. The National Defense Strategy "contact force" is composed of forward presence forces. The "blunt force" is a combination of forward presence forces and early-entry expeditionary forces. The "surge force" is follow-on expeditionary forces that arrive after the outbreak of armed conflict.

interoperability with partners through their integration into existing structures for command and control, intelligence, targeting, and cyberspace that are difficult for expeditionary forces to establish in a crisis or conflict. The persistence of Army forward presence forces is a foundational element of dynamic employment of the Joint Force as it enables joint strategic maneuver with critical combat, sustainment, protection, and mission command capabilities.

(2) **Expeditionary forces.** Expeditionary Army forces are those formations ready to maneuver from the U.S. or other regions across strategic distances while in contact with the adversary's reconnaissance, long-range fires, space, and cyberspace capabilities. Forces that deploy by air either bring their equipment or draw prepositioned equipment and are ready to fight within days or a few weeks of alert. Expeditionary forces deploying by sea are ready to fight within weeks. Expeditionary forces may also have to conduct joint forcible entry operations in the absence of forward presence forces or to open an additional line of operation. In conflict, the speed and effectiveness with which expeditionary forces can deploy along contested lines of communications are heavily dependent on the preparation and support of forward presence forces, the Reserve Components, other Services, and partners.

(3) **National-level capabilities.** National-level capabilities include intelligence, cyberspace, space-based, and some kinetic strike capabilities normally controlled above the theater level. These capabilities complement forward presence and expeditionary forces with their unique effects, global reach, and rapid execution that require little or no physical movement. The scarcity of these resources and the potential for unintended consequences with their use might cause policymakers to retain authorities or permissions for their use. The extensive preparation required to use these resources must begin in competition, when U.S. forces develop detailed intelligence identifying specific vulnerabilities, gain or prepare to request required authorities, and train to use national-level capabilities.

(4) **Authorities.** To operate in all domains, the EMS, and the information environment, the lowest appropriate echelon of Army forces requires tailored authorities in three broad areas: access, surveillance, and employment.[27] In competition, they need access to and presence in geographic areas and military and civilian networks that enable them to operate in both competition and conflict. In armed conflict, Army forces must have authorities to employ capabilities such as electronic attack, offensive cyberspace and space measures, and lethal strikes, especially to support a rapid transition from competition to conflict. In both competition and conflict, authorities to operate in the cyberspace domain and information environment must be granted earlier, faster, and to lower echelons to enable MDO. Forward presence headquarters enable success in both competition and the transition to armed conflict by making necessary coordination and lowering barriers to obtaining authorities before they are needed. Tailored authorities must also enable the Army's role as a force provider, with particular focus on authorities to notify and mobilize planned and contingency Reserve Component forces, formations, and headquarters.

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[27] Examples of authorities include country team permissions for physical and virtual access (e.g., overflight permissions, access agreements, convoy clearances, materiel and non-materiel host nation support, ability to use or block segments of the EMS, and ability to employ offensive cyberspace operations), the ability to task transportation assets and forces for deployment, authority to obligate funds, and authority to conduct cross-boundary coordination.

c. **Multi-domain formations.** Multi-domain formations possess the combination of capacity, capability, and endurance which generates the resilience necessary to operate across multiple domains. All Army formations must be multi-domain capable to some degree. Multi-domain formations can conduct independent maneuver, employ cross-domain fires, and maximize human potential. The most important materiel contributors to resilience are advanced protection systems, reduced signatures, redundant channels for communications hardened against enemy interference, multiple sustainment networks, robust maneuver support capability and capacity, layered air defense, layered reconnaissance, and multi-domain obscuration capabilities. The most important non-materiel contributors to resilience are flexible planning that account for enemy actions, the ability to reorganize formations in conflict, leaders and staffs capable of operating in accord with intent, and small, dispersed, cross-trained headquarters. These combined contributors provide the resilience necessary for Army formations and systems at all echelons to conduct both offensive and defensive operations in contested spaces against a near-peer adversary.

(1) **Conduct independent maneuver.** Multi-domain formations conduct independent maneuver by continuing operations in a contested environment within the intent of the theater campaign.[28] Independent maneuver alludes to formation possessing the capacity, capability, and empowered initiative to operate under the constraints of the operational environment. Multi-domain formations possess organic capabilities to sustain and protect themselves until they regain contact with adjacent and supporting units. They are enabled by capabilities such as reduced visual and electromagnetic signatures, redundant channels for communications hardened against enemy interference, reduced logistics demand, enhanced medical support, multiple sustainment networks, robust maneuver support capability and capacity, and multi-domain obscuration capabilities. Brigades, divisions, and corps, specifically, require organic mission command, ISR, and sustainment capabilities to maintain offensive operations for several days despite highly contested lines of communications.

(2) **Employ cross-domain fires.** The ability to employ cross-domain fires provides options to commanders and builds resilience within the Joint Force to overcome temporary functional separation imposed by enemy anti-access and area denial systems. Beyond modernized air and missile defense and long-range ground fire capabilities, multi-domain formations deliver cross-domain fire capabilities through aviation systems; advanced protection systems, layered air defense and reconnaissance, EW devices; multi-spectral sensor-fused munitions; and cyberspace, space, and information related capabilities. Cross-domain fires include the ISR capabilities required to employ them, which can comprise a mixture of organic capabilities and access to external assets. Cross-domain fires combine with necessary advancements in mobility and lethality in future air and ground platforms, communications networks, and data processing (speed and volume) to provide the capabilities for cross-domain maneuver.

(3) **Maximize human potential.** The Army builds and sustains multi-domain formations through the selection, training, and education of the leaders and Soldiers in them. Advances in

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[28] Independent maneuver is operating dispersed for an extended period without continuous [or contiguous] support from higher echelons while retaining the ability to concentrate combat power rapidly at decisive spaces by employing cross-domain fires and maneuver to achieve mission objectives within the intent of the theater campaign.

performance science enable Soldiers and junior leaders to enter operations at peak cognitive, physical, and emotional potential. Biotechnical sensors monitoring the status and changes in human performance augment commanders' understanding of their units, inform decisions about the tempo and intensity of operations, and assist units in sustaining and regenerating physical and psychological strength. Man-machine interfaces, enabled by artificial intelligence and high-speed data processing, improve human decision making in both speed and accuracy. Employing multi-domain capabilities requires the Army to attract, train, retain, and employ leaders and Soldiers who collectively possess a significant breadth and depth of technical and professional expertise. The Army must exercise careful talent management to make the most of these high-quality personnel and integrate them into trusted teams of professionals who are able to thrive in ambiguity and chaos. Improving the resilience of leaders and Soldiers—the Army's most valuable capability—requires training, educating, equipping, and supporting them to execute MDO in all of its intensity, rigor, and complexity.

d. **Convergence.** Convergence is the rapid and continuous integration of capabilities in all domains, the EMS, and the information environment that optimizes effects to overmatch the enemy through cross-domain synergy and multiple forms of attack all enabled by mission command and disciplined initiative. The Joint Force currently converges capabilities through episodic synchronization of domain-federated solutions. Future operations against a near-peer threat, however, will require the Joint Force to conduct continuous and rapid integration of multi-domain capabilities to gain cross-domain overmatch at decisive spaces. Decisive spaces are locations in time and space (physical, virtual, and cognitive) where the full optimization of the employment of cross-domain capabilities generates a marked advantage over an enemy and greatly influences the outcome of an operation. Convergence complicates the enemy's attempts to conceal and defend its center of gravity by providing the Joint Force with multiple options for attacking the enemy's vulnerabilities at decisive spaces. Multi-domain formations, at echelon, utilize convergence during competition and conflict to apply capabilities against vulnerabilities in an adversary's or enemy's systems.

(1) Convergence has two advantages over single-domain alternatives: the creation of cross-domain synergy and the layering of options across domains to enhance friendly operations and impose complexity on the enemy. Through convergence, multi-domain capabilities are brought together in stimulate-see-strike or see-strike combinations that disrupt, degrade, destroy, or dis-integrate enemy systems or create windows of superiority to enable friendly exploitation of the initiative.

(a) **Cross-domain synergy.**[29] The principle of cross-domain synergy is an evolution of combined arms maneuver. The combination of complementary effects complicates an enemy's ability to act, producing an overall effect greater than the sum of the individual parts (see figure 3-2). Synergy optimizes capabilities from across all domains, the EMS, and the information environment to achieve the maximum effect from the available resources. Against a near-peer enemy, the Joint Force will not have sufficient capacity to achieve overmatch without cross-domain synergy.

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[29] Cross-domain synergy is an idea introduced in the Joint Operational Access Concept and continued as a key idea in the Capstone Concept for Joint Operations. It is defined as the complementary vice merely additive employment of capabilities in different domains such that each enhances the effectiveness and compensates for the vulnerabilities of the others to establish superiority in some combination of domains that will provide the freedom of action required by the mission.
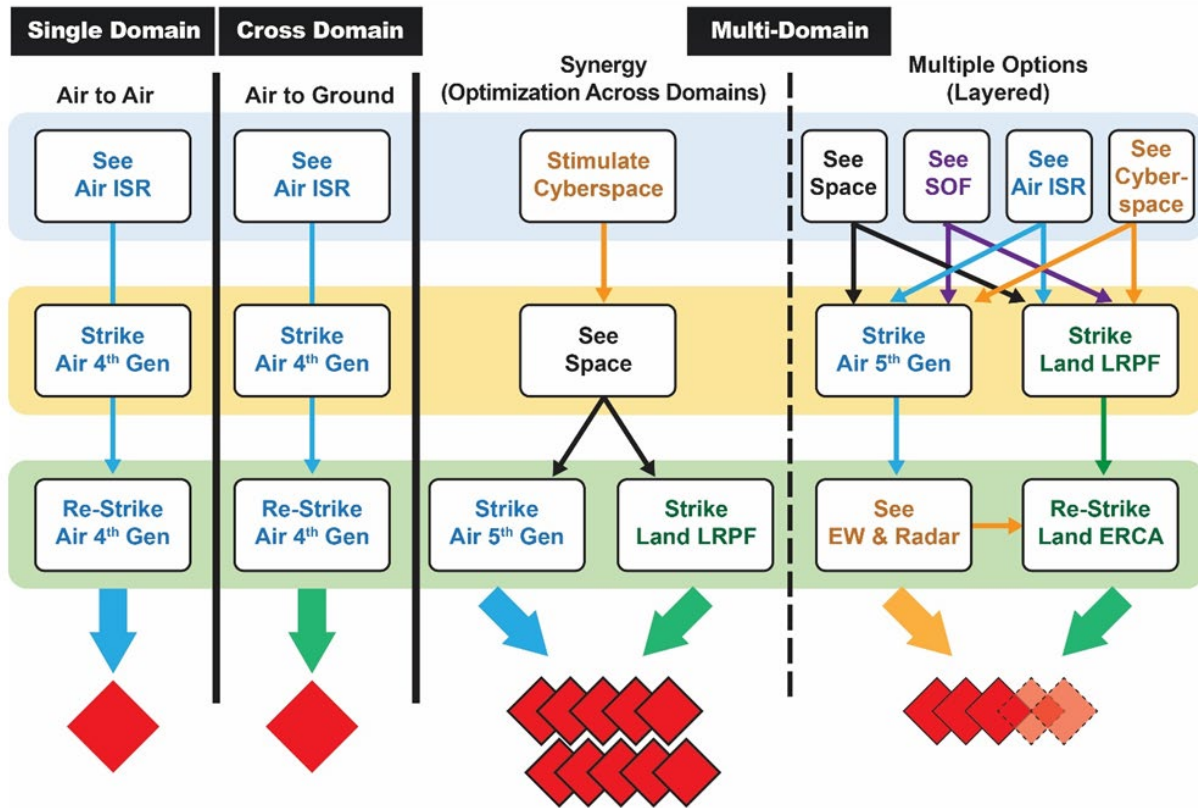
Figure 3-2. Converging capabilities to generate cross-domain synergy and layered options

(b) **Layered options.** The layering of multiple forms of convergence provides friendly commanders with options and imposes complexity on the enemy (see figure 3-2). The creation of additional options makes it easier for friendly forces to target enemy vulnerabilities in unexpected ways and avoids dependence on a single method of seeing or striking. Layered options also confront the enemy with an array of different threats to which it must respond. So long as those convergence combinations are relatively simple for friendly forces to execute, the result is a net imposition of complexity upon enemy command and control systems.

(2) **Mission command.** Mission command remains an essential element of Army operations on a contested battlefield against a near-peer enemy. Since the enemy will disrupt friendly communications and plans, mission command must expand to enable initiative and dynamic cooperation across Service and other partner lines—at some risk—to allow the Joint Force to preserve the ability to continuously and rapidly integrate multi-domain capabilities despite disrupted communications. One manifestation of mission command is *intent-based synergy*, the dynamic cooperation that enables the sufficient integration of available cross-domain capabilities to achieve dominant or essential effects at a decisive space, acknowledging some degree of risk or collateral cost. Commanders must deliberately create and foster conditions favorable to mission command so that ever disparate formations and capabilities are ready to act upon mutual recognition of an opportunity or in response to a battlefield development.

(3) **Convergence at echelon.** Multi-domain formations and calibrated force posture enable convergence. The principles of convergence apply across echelons, but vary based on specific requirements.

(a) **Theater army.** Theater armies are forward presence forces. They enable interagency access, set the theater, enable expeditionary maneuver, and protect joint bases, nodes, and networks. Theater armies set the conditions for operational and tactical convergence by calibrating force posture with Combatant Commands, the Joint Staff, and Headquarters, Department of the Army to ensure that necessary joint and Army capabilities are in theater or can be accessed when and where needed to deter or defeat aggression. Theater armies converge offensive space control capabilities on behalf of all Army forces in theater. Theater armies are also the main Army echelon converging capabilities to support joint and combined information environment operations.

(b) **Field army.** Field armies are forward presence forces in regions that have near-peer threats. They relieve the operational burden on theater armies to facilitate focused opposition toward that specific threat within a distinct area of operations. They prosecute the campaign in competition by conducting intelligence preparation of the battlefield (IPB), enabling partners and SOF, deterring the adversary's aggression, and managing the transition to conflict. They have the ability to command two or more corps. The field army provides long-range fires to other component commanders against enemy long-range systems. In competition, the field army oversees deception, the selective demonstration of capabilities, and the masking of others to create uncertainty and deter an adversary's aggression. The field army also creates options for convergence through focused planning and preparation for multi-domain interoperability with partners. The field army converges capabilities to destroy enemy long-range ground fires and, if no corps headquarters is present during the transition to armed conflict, will assist with the targeting and neutralization of mid-range systems. In competition and conflict, the field army is the Army echelon responsible for converging national-level capabilities into its or subordinate echelons' maneuver. In competition and conflict, the field army is responsible for analyzing high-volume data from national and theater intelligence collection assets, and linking sensors to specific shooters in support of operational ground objectives. Intelligence enabling formations at the field army level will be task organized and tailored to the operational environment.

(c) **Corps.** Corps are expeditionary forces. The corps shapes multiple enemy combined arms armies simultaneously by assisting with the defeat of long-range systems and the neutralization of mid-range systems. The corps also commands two or more divisions and enablers. It is responsible for converging capabilities against all enemy long-range systems (air defense, anti-ship, and long-range ground fires) within areas designated by the Joint Force Commander and providing Army capabilities to assist other components when the corps is responsible for multi-domain command and control. A corps converges capabilities against enemy mid-range fires formations within its areas of operations. The corps is the Army echelon responsible for converging large amounts of joint fires, whether against enemy mid-range systems or in support of division or brigade maneuver. The corps also converges national- and theater-level offensive cyberspace with other capabilities to achieve operational and tactical objectives. The corps creates conditions for convergence at lower echelons by allocating resources, sequencing division maneuver, and incorporating it with deception. In competition

and conflict, a corps conducts intelligence analysis to converge national, theater, and organic ISR collection to support tactical ground objectives.

(d) **Division.** Divisions can be either forward presence or expeditionary forces. A division enables independent maneuver, conducts expeditionary maneuver, commands multiple brigade combat teams and enabling brigades, and defeats a shaped enemy army in the Close Area. It converges aviation, fires, EW, maneuver support, and multi-brigade maneuver to achieve positions of advantage against a combined arms army (or similar formation) that has had its mid-range fires systems destroyed or neutralized. The division has the multi-domain command and control capacity to incorporate some reinforcing joint or Army fires when it is a secondary effort. A division that is the main effort and has been allocated a large number of air sorties, a significant amount of naval strikes, or several brigades of reinforcing ground fires requires assistance from the corps to converge capabilities on that scale. With assistance from higher echelons, the division can converge national-level and offensive space capabilities into its scheme of maneuver. A division has the analytical capacity to converge limited amounts of national- or theater-level intelligence sources with its organic ISR.

(e) **Brigade.**[30] Brigades converge organic ISR, maneuver, and fires capabilities with limited amounts of available aviation, maneuver support, EW, joint fires, and offensive space capabilities. All brigades are multi-domain capable, yet those responsible for controlling terrain require high levels of cross-domain organic capabilities to create the convergence that enables their broader task sets. Brigades habitually access intelligence, EW, cyberspace, and space capabilities through the division, corps, and field army as described above. Brigades execute convergence and cross-domain maneuver to see, isolate, maneuver, and/or protect to exploit the initiative and achieve positions of advantage to accomplish their missions. A brigade has the analytical capacity to converge limited amounts of national- or theater-level intelligence sources with its organic ISR.

e. **Multi-domain command and control.** Interoperability across Service, interagency, and multinational partners is a key element to executing MDO. Multi-domain command and control is the combination of joint and combined materiel, processes, and authorities that underpin convergence, multi-domain formations, and mission command designed to enable and exploit interoperability.[31] Effective multi-domain command and control requires a resilient technical architecture, flexible command relationships, and multi-domain control measures. A resilient technical architecture provides connectivity to pass critical information between headquarters, units, aircraft, or ships at critical moments in operations. Flexible command relationships allow the rapid reallocation of multi-domain capabilities and formations across functional components and echelons to achieve convergence. Flexible command relationships also allow the creation of favorable force ratios through rapid task organization and re-organization of reinforcing fires and capabilities among echelons. Multi-domain control measures create the framework for mission command by allowing units the greatest possible latitude to execute cross-domain maneuver within intent. Multi-domain control measures also facilitate coordination between echelons,

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[30] This includes all types of brigade-level formations, not only Brigade Combat Teams.
[31] North Atlantic Treaty Organization Allied Joint Publication 01(D), Allied Joint Doctrine, describes the three dimensions of joint and allied interoperability – technical (e.g., hardware, systems) procedural (e.g., doctrines, procedures), and human (e.g., language, terminology, and training). These directly align to the technical architecture, control measures, and command relationships in multi-domain command and control.

adjacent units, and joint partners. When technical architecture is disrupted, flexible command relationships and multi-domain control measures are the enabling elements of mission command.

3-4. MDO and strategic objectives

a. The *U.S. Army in Multi-Domain Operations* is an operational-level military concept designed to achieve U.S. strategic objectives articulated in the *National Defense Strategy,* specifically deterring and defeating China and Russia in competition and conflict.[32] The concept also supports execution of the Army's four enduring strategic roles: prevent conflict, shape the security environment, prevail in large-scale ground combat operations, and consolidate gains. These strategic objectives require Army forces to solve the five multi-domain problems described in section 3-1. The following sections describe how MDO solves each of these problems. Section 3-5 addresses the first problem of competing to defeat aggression short of armed conflict and to deter conflict. Section 3-6 addresses the second problem of penetrating enemy anti-access and area denial systems to enable strategic and operational maneuver in conflict. Section 3-7 addresses the third problems of dis-integrating enemy's anti-access and area denial systems in theater to enable operational and tactical maneuver. Section 3-8 addresses the fourth problem of exploiting freedom of maneuver to defeat the enemy and achieve U.S. strategic objectives. Section 3-9 addresses the final problem of re-competing to consolidate gains and expand the competitive space and enable policymakers to resolve the conflict. The remainder of this section describes how solving these operational problems leads to the attainment of strategic objectives.

b. A multi-domain capable Joint Force can achieve friendly strategic objectives (win) and defeat the adversary in three different ways. The preferred method of attaining strategic objectives is effective competition that deters escalation and defeats adversaries' destabilization efforts. If deterrence fails, the second method is to employ a combination of forward presence and expeditionary forces to deny enemy objectives within days and achieve an operational position of relative advantage within weeks that leads to an acceptable, sustainable political outcome. If neither side is able to achieve its objectives in a short conflict, the third method is to defeat the enemy in a protracted war. The three methods are interrelated as the will and capability to win a long war, if necessary, is an essential element to convincing an adversary that it cannot achieve a *fait accompli* and will not achieve aims in competition below armed conflict. The demonstrated ability and readiness to deny a *fait accompli* attack*,* in turn, creates a position of strength for the Joint Force in competition. The Army is essential in each of the three ways to defeat an aggressive adversary and provide political leaders with as many options as possible to deter through determined competition or, when necessary, prosecute and end an armed conflict on favorable conditions before returning rapidly to a renewed competition.

c. **Compete.** The Joint Force succeeds in competition by defeating the adversary's efforts to achieve their strategic goals and deterring military escalation; it does this by expanding the competitive space for policymakers through multiple options for employing the elements of

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[32] U.S. Department of Defense, *Summary of the 2018 National Defense Strategy of the United States of America: Sharpening the American Military's Competitive Edge,* https://www.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf.

national power.[33] Army forces play an integral role in this effort, actively engaging across domains (including space and cyberspace), in the EMS, and in the information space. The demonstrated capability to prevail in competition and in conflict counters adversaries' narratives that portray the U.S. as a weak or irresolute partner. The combination of the ability to both effectively compete below armed conflict and to respond to an escalation toward armed conflict creates a position of strength and sets favorable conditions if conflict ensues. This position of strength provides a favorable environment for Joint Force, interagency, and partner efforts to counter adversaries' coercion through unconventional and information warfare. The adversary's proxies receive little or no support from its conventional forces, which allows U.S. partners to counter attempts to destabilize their countries more easily. The combined and persistent effects of deterring armed conflict and defeating unconventional and information warfare in a campaign of competition create unpredictability for the adversary and generate additional friendly options, thereby expanding the competitive space for policymakers.

   d. **Penetrate, dis-integrate, and exploit.** In the event of armed conflict, Army forward presence and expeditionary forces enable the rapid defeat of aggression through a combination of calibrated force posture, multi-domain formations, and convergence to immediately contest an enemy attack in depth. Army long-range fires converge with joint multi-domain capabilities to penetrate and dis-integrate enemy anti-access and area denial systems to enable Joint Force freedom of strategic and operational maneuver. Within the theater, Army forces converge capabilities to optimize the employment of capabilities from across multiple domains against critical components of the enemy's anti-access and area denial systems, specifically long-range air defense and fires systems. Convergence against the enemy's long-range systems enables the initial penetration. This sets the conditions for a quick transition to joint air-ground operations in which maneuver enables strike and strike enables maneuver. MDO in the Close and Deep Areas combine fires, maneuver, and deception to dislocate the enemy defense by physically, virtually, and cognitively isolating its subordinate elements, thereby allowing friendly forces to achieve local superiority and favorable force ratios. Army forces, having penetrated and begun the dis-integration of the enemy's anti-access and area denial systems, exploit vulnerable enemy units and systems to defeat enemy forces and achieve friendly campaign objectives. As part of the Joint Force, Army forces rapidly achieve given strategic objectives (win) and consolidate gains.

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[33] Expanding the competitive space entails those activities, short of war, that integrate multiple elements of national power to counter the long-term strategic objectives of adversaries. A more lethal force, strong alliances and partnerships, American technological innovation, and a culture of performance generate decisive and sustained U.S. advantages. See, *Summary of the 2018 National Defense Strategy of the United States of America*, 4.
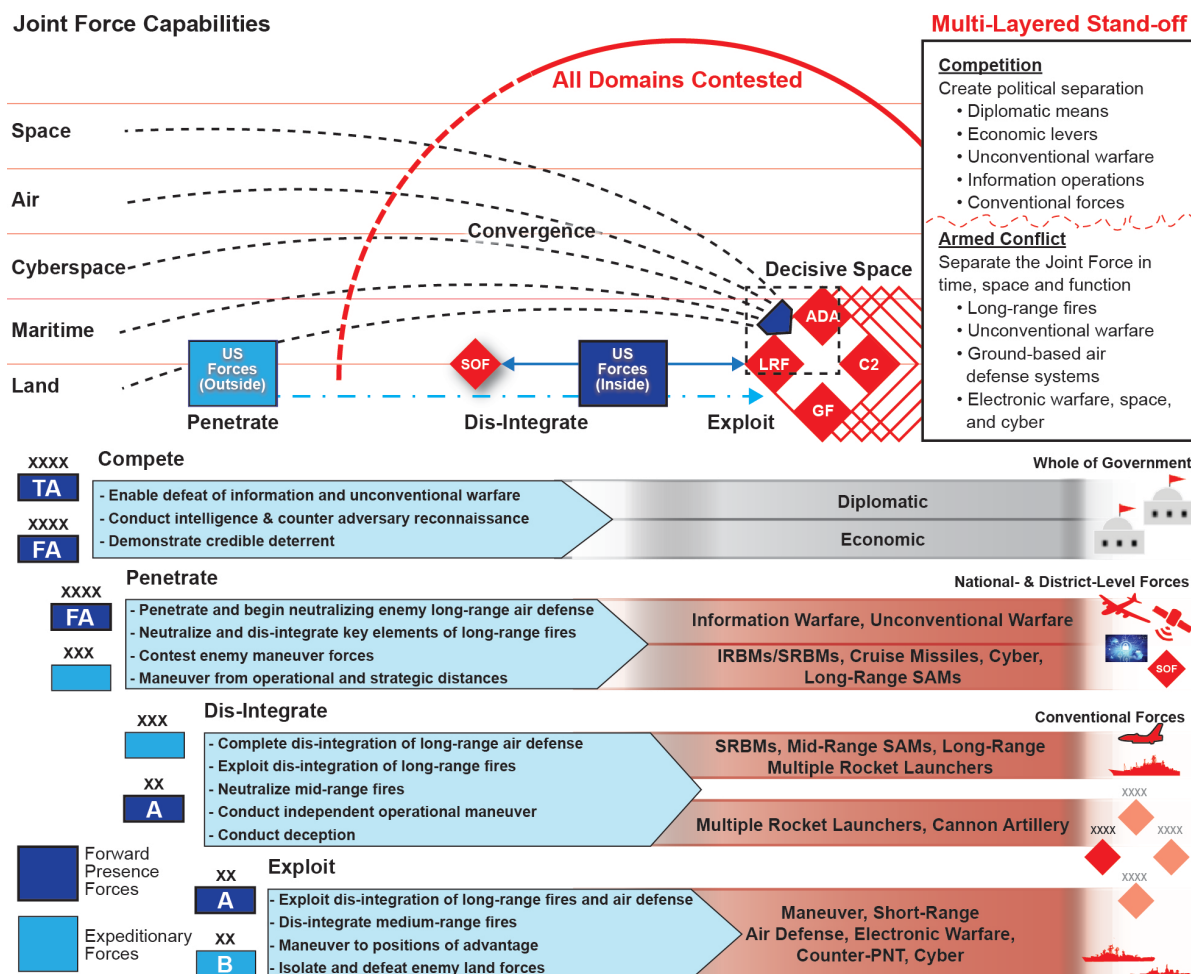
Joint Force Capabilities

Multi-Layered Stand-off

All Domains Contested

Space

Air

Convergence

Cyberspace

Decisive Space

Maritime

Land

Penetrate | **Dis-Integrate** | **Exploit**

US Forces (Outside)

SOF

US Forces (Inside)

ADA
LRF C2
GF

Competition
Create political separation
- Diplomatic means
- Economic levers
- Unconventional warfare
- Information operations
- Conventional forces

Armed Conflict
Separate the Joint Force in time, space and function
- Long-range fires
- Unconventional warfare
- Ground-based air defense systems
- Electronic warfare, space, and cyber

Compete

Whole of Government

TA (xxxx)
FA (xxxx)

- Enable defeat of information and unconventional warfare
- Conduct intelligence & counter adversary reconnaissance
- Demonstrate credible deterrent

Diplomatic

Economic

Penetrate

National- & District-Level Forces

FA (xxxx)
(xxx)

- Penetrate and begin neutralizing enemy long-range air defense
- Neutralize and dis-integrate key elements of long-range fires
- Contest enemy maneuver forces
- Maneuver from operational and strategic distances

Information Warfare, Unconventional Warfare

IRBMs/SRBMs, Cruise Missiles, Cyber, Long-Range SAMs

SOF

Dis-Integrate

Conventional Forces

(xxx)
A (xx)

- Complete dis-integration of long-range air defense
- Exploit dis-integration of long-range fires
- Neutralize mid-range fires
- Conduct independent operational maneuver
- Conduct deception

SRBMs, Mid-Range SAMs, Long-Range Multiple Rocket Launchers

Multiple Rocket Launchers, Cannon Artillery

Forward Presence Forces

Expeditionary Forces

Exploit

A (xx)
B (xx)

- Exploit dis-integration of long-range fires and air defense
- Dis-integrate medium-range fires
- Maneuver to positions of advantage
- Isolate and defeat enemy land forces

Maneuver, Short-Range Air Defense, Electronic Warfare, Counter-PNT, Cyber

Figure 3-3. MDO solutions

e. **Re-compete.** Army forces contribute to the consolidation of strategic gains after a conflict by securing the initiative and maintaining operational contact in all domains, the EMS, and the information environment. This approach ensures that military and political conditions remain favorable to the U.S. and its partners. Particularly following an armed conflict with a nuclear power, the enemy will retain significant conventional military capability in the field. Army forces, therefore, have to simultaneously deter a return to conventional warfare and assist partner forces in restoring order to prevent the enemy from exploiting the internal disruption for strategic advantage.[34] These functions spanning the competition continuum expand the competitive space for policymakers, enable strategic objectives, and secure the initiative.[35]

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[34] In most cases, the Army will be required to execute tasks to restore order and support partner's political, economic, and social structure recovery (per FM 3-07 *Stability*) because civilian agencies lack the capacity or capability to do this in a combat zone.

[35] The Joint Concept for Integrated Campaigning proposes the notion of a *competition continuum* that offers an alternative to the obsolete peace/war binary with a new model of cooperation, competition below armed conflict, and armed conflict. These are not mutually exclusive conditions and various states of relationships with other actors can exist concurrently. This concept focuses on conditions of competition and armed conflict.

3-5. MDO in competition: Compete to expand the competitive space

a. Multi-domain problem #1: How does the Joint Force <u>compete</u> to defeat an adversary's operations to destabilize the region, deter the escalation of violence, and, should violence escalate, enable a rapid transition to armed conflict?
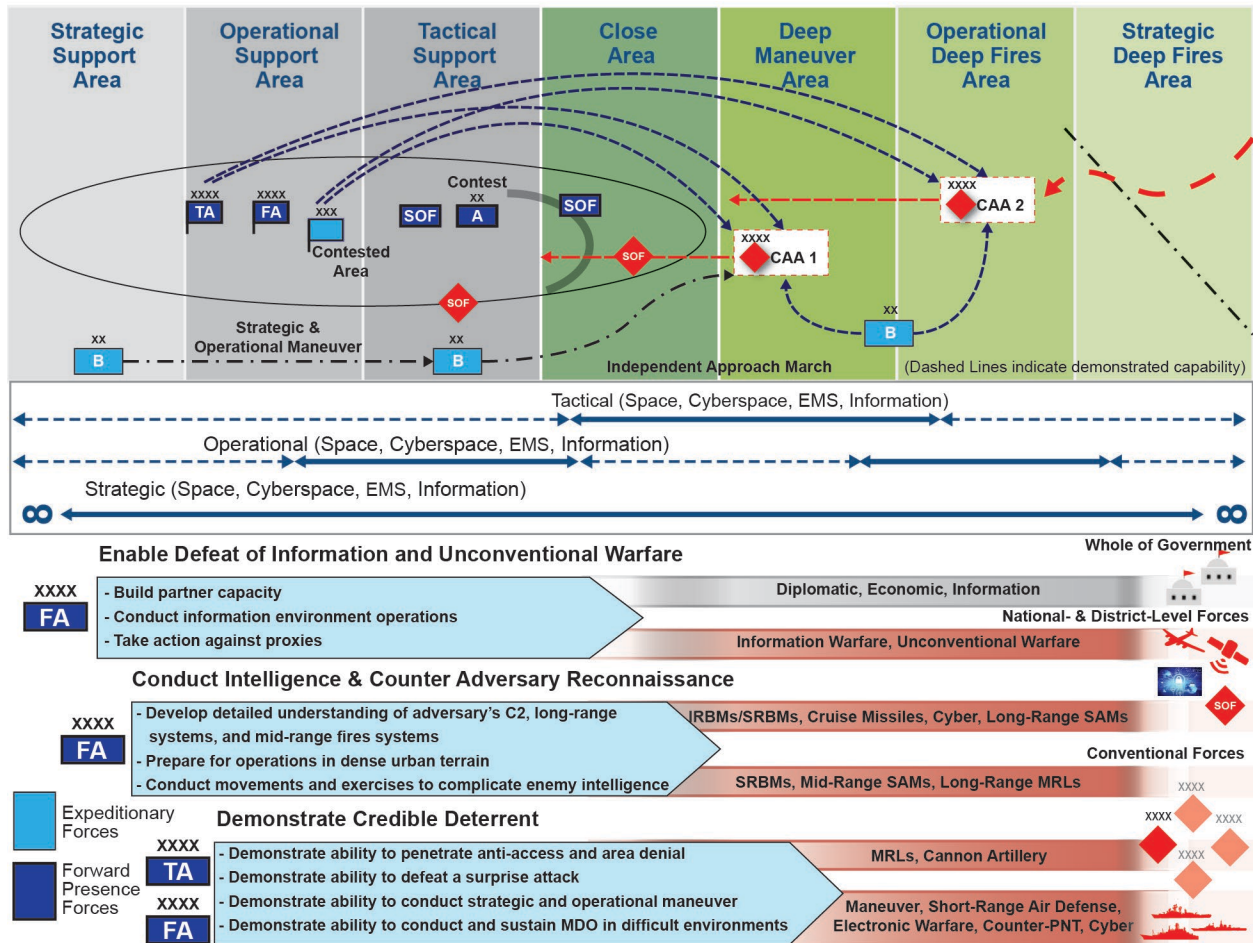

Figure 3-4. Competition

b. Success in competition achieves three critical objectives: deterring conflict on terms favorable to the U.S., countering adversaries' efforts to expand the competitive space below the threshold of armed conflict, and enabling the rapid transition to armed conflict. In the past, the U.S. military—due to cultural, statutory, and policy reasons—has often remained reactive in competition below armed conflict. The *U.S. Army in Multi-Domain Operations* concept emphasizes the importance of active engagement by the Joint Force, and particularly the Army, in competition to defend U.S. interests, deter conflict, and, when needed, create the most favorable conditions for the Joint Force's rapid transition to armed conflict.

c. The Army competes successfully, as part of a joint, interagency, and multinational team, by defeating the adversary's attempts to destabilize regional security and by deterring armed conflict through a series of mutually reinforcing actions. The field army conducts detailed tactical and operational intelligence preparation of the battlefield to enable forward presence and

expeditionary forces to immediately defeat a surprise attack by the adversary. In conjunction with partners and the Joint Force, Army forces counter the adversary's reconnaissance and conduct deception to create uncertainty within an adversary's decision making process. Forward presence forces also contribute to the defeat of the adversary's unconventional warfare campaign, both directly and indirectly, both by enabling partners with advisors and capabilities and by building enduring partner capability and capacity. These formations, enabled by the necessary authorities, actively engage in the information space through a variety of means, including cyberspace and EMS capabilities. Finally, both the theater and field army conduct intensive preparations for conventional warfare to demonstrate a credible deterrent. The theater army sets the theater to enable the dynamic employment of the Joint Force. The field army "sets the campaign" to ensure the Joint Force and partners can rapidly transition from competition to conflict.

   d. **Conduct intelligence and counter adversary reconnaissance.** In competition, the field army coordinates collection against and analysis of the adversary's operational and tactical systems, as well as other facets of the operational environment and civil networks. Subsequently, the field army disseminates information to allocated joint and Army expeditionary forces to familiarize them with the adversary's systems and likely areas of joint and Army operations. The field army also has the primary responsibility for countering the adversary's reconnaissance through counter-reconnaissance and deception. Collectively, these actions enable the Joint Force to rapidly transition to armed conflict and create uncertainty for the adversary as to whether it can achieve its objectives through a surprise attack.

   (1) **Develop understanding of military capabilities.** The complexity of modern military equipment requires months or years of focused intelligence collection and analysis to identify and exploit tactical or technical weaknesses. The field army works primarily with theater- and national-level capabilities to develop a detailed understanding of the adversary's command and control and long-range (IADS, SRBM, and long-range MRL) and mid-range systems (mid-range SAM, MRL, and cannon artillery). When the adversary's forces conduct maneuvers or "snap exercises" near territory of U.S. partners, the field army deploys organic and allocated ISR (e.g., airborne ISR, high-altitude ISR balloons, and electronic intelligence capabilities) to refine technical intelligence and to understand the adversary's operational patterns and methods of employment by specific unit and capability. The field army also seeks to create intelligence collection opportunities by leveraging training and reassurance operations in partner territory adjacent to an adversary to stimulate and analyze enemy ISR capabilities.

   (2) **Analyze operational environment and civil networks.** All echelons of forward presence forces conduct terrain analysis and familiarization of friendly territory threatened by an adversary. This effort builds the necessary information that allows the Joint Force Commander to visualize the three-dimensional, multi-domain environment at a level of detail for tactical execution and operational planning. Dense urban terrain requires additional preparatory intelligence activities to understand the human, social, and infrastructure details. The field army focuses IPB on select urban areas that are likely to be of critical of strategic and operational importance in conflict.

(3) **Conduct deception.** In competition, the theater and field armies conduct deception primarily through dynamic changes to calibrated force posture. These actions seek to complicate the adversary's efforts to determine the capability and capacity of friendly forces in theater. While exercises, training, and alerts are designed to demonstrate specific capabilities, they also provide opportunities to mislead the adversary regarding the disposition and staging of forces, use of the EMS and cyberspace signatures, and patterns and methods of employment. These actions create unpredictability and complicate the adversary's reconnaissance efforts, which increases the likelihood of compromising its assets. The theater army also employs data encryption, network access limitations, and decoy data to defeat the adversary's cyber reconnaissance.

(4) **Execute counter-reconnaissance.** The field army conducts and coordinates counter-reconnaissance operations principally through partner security forces and interagency partners. Partner security forces generally possess the authorities, capacity, and local expertise to counter the enemy's covert intelligence efforts. The primary role of the field army, therefore, is to assist partner security forces with counter-reconnaissance operations. These actions reduce the tactical effectiveness of an adversary's efforts in competition and their ability to transition rapidly from competition to armed conflict.

e. **Enable defeat of the adversary's information and unconventional warfare.** Army forces support joint and partner campaigns to defeat the adversary's information and unconventional warfare operations through the provision of capabilities, expanded authorities, and the conduct of supporting operations.

(1) **Conduct information environment operations (IEO)**. The Joint Force seizes the initiative in competition by actively engaging in the information space across domains (to include cyberspace) and the EMS. The theater army converges Army actions and messaging in support of the Joint Force Commander's IEO, though all echelons engage in the information space in support of policy and commander's intent. To accomplish this mission, subordinate echelons must be enabled with access to intelligence, cyberspace, and EMS capabilities; appropriate authorities and permissions normally reserved for conflict or at higher echelons; and policy guidance expressed as intent rather than narrow, restrictive directives. This allows forward presence forces to aggressively take tailored actions and employ messages to counter and expose inconsistencies in the adversary's information warfare operations. The Army primarily contributes to the strategic narrative, however, by reinforcing the resolve and commitment of the U.S. to its partner and demonstrating its capabilities as a credible deterrent to conflict.

(2) **Conduct irregular warfare.**[36] The theater and field armies enable joint, interagency, and partner irregular warfare campaigns by providing multi-domain formations with regional understanding to the Joint Force Commander. When an adversary employs proxies, Army forces defeat them principally through the indirect enabling of partners, but can support directly through unilateral action. Special operations forces and security force assistance brigades support partner

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[36] *Irregular warfare* is comprised of five core activities: counterinsurgency, counterterrorism, unconventional warfare, foreign internal defense, and stability operations.

irregular warfare efforts both by building enduring partner capacity and by enabling them with advisors and capabilities.

f. **Demonstrate credible deterrent.** By shaping the entire theater and addressing aggression outside the field army's area of operations, the theater army allows the field army to set the campaign against a near-peer adversary's military formations and stand-off capabilities. To provide a credible deterrent, the field army calibrates force posture to reduce an adversary's local military superiority, employs multi-domain formations to withstand a surprise attack, and demonstrates the ability to converge forward presence, joint, and national-level capabilities to disrupt any surprise attack. Specifically, Army forces must demonstrate four capabilities in competition to deter the adversary.

(1) **Ability to immediately deny a *fait accompli* attack.** The field army must be able to deny an enemy *fait accompli* attack within weeks by employing a mixture of forward presence, expeditionary (air deployed assets/formations and prepositioned equipment), and national-level forces.

(2) **Ability to penetrate anti-access and area denial systems.** Forward presence Army long-range fires must enable the Joint Force to immediately begin neutralizing enemy long-range systems (IADS, SRBM, long-range MRL, and command and control) and have munitions stockpiles in theater sufficient to support operations for several weeks.

(3) **Ability to conduct strategic and operational maneuver.** Army expeditionary forces must build and demonstrate the ability to conduct strategic and operational maneuver into an area of operations despite contested lines of communications.

(4) **Ability to support MDO.** Army forces have to calibrate force posture and field multi-domain formations to facilitate the Joint Force to dictate and sustain operational tempo in conflict. To credibly accomplish these tasks, the theater and field army establish command and control mechanisms, ensure interoperability, and sustain and protect forward presence forces.

(a) **Establish command and control mechanisms.** In competition, the field army prepares to converge lethal and nonlethal effects from the beginning of a conflict by planning with forward presence forces, other elements of the Joint Force, and partners. This preparation includes developing the necessary multi-domain command and control architectures, flexible command relationships, and physical and virtual control measures for converging capabilities. Precise and integrated effects are critical to operations in dense urban terrain, but also facilitate operations in other environments, particularly chemical, biological, radiological, or nuclear (CBRN) impacted zones.

(b) **Ensure interoperability.** Forward presence forces must be fully interoperable with the remainder of the Joint Force and, to the greatest extent possible, with multinational partners and relevant interagency partners. If a low degree of interoperability exists with a partner, Army forces integrate MDO through an array of doctrinal or ad hoc organizational methods, such as liaison cells. Increasing interoperability builds capacity and expands the range of options for the Joint Force Commander.

(c) **Sustain and protect forward presence forces.** The theater army ensures the Operational Support Area has the capacity, capability, and endurance to sustain and generate force despite the adversary's long-range fires (ballistic and cruise missiles, special operations, offensive space, and cyber attacks). The field army ensures the Tactical Support Area and Close Area possess the multi-domain formations needed to sustain and generate force despite the adversary's ballistic missiles, long-range MRLs, air defenses, and cyber attacks. The theater army creates resilience through the protection, hardening, and dispersal of key command, control, and logistics nodes. It also plans and coordinates for multiple sea and air ports of entry and lines of communication throughout the Operational and Tactical Support Areas.

g. **Conclusion: MDO in competition.** Army forces, as part of the Joint Force, compete with a near-peer adversary by defeating their operations below the threshold of armed conflict and deterring an escalation of violence. Army forces at all echelons support U.S. policy and objectives through proactive engagement in the information space, and are in turn enabled by delegated authorities and permissions, intent-based guidance, and access to joint and national-level capabilities in intelligence, cyberspace, and the EMS. The friendly information narrative is supported by the demonstrated capability to deny a *fait accompli* attack and an adversary's operational objectives. Demonstrated capabilities in competition undermine the adversary's information warfare operations and generate complexity and uncertainty in their decision making process. Most importantly, active engagement in competition establishes a robust operational assessment of the adversary's forces and capabilities and sets the campaign to ensure the Joint Force can rapidly transition to armed conflict and immediately provide an offensive response to aggression.

The three subsequent sections detail actions to penetrate stand-off, dis-integrate anti-access and area denial systems, and exploit the resulting freedom of action and maneuver. Although presented sequentially, each section's actions overlap in time and space to varying degrees. Because near-peer enemies have the ability to adapt, reorganize, and reconstitute their systems and formations, friendly forces continue penetration and dis-integration concurrent to maneuver to fully exploit windows of superiority.

3-6. MDO in armed conflict: Penetrate strategic and operational stand-off

a. Multi-domain problem #2: How does the Joint Force <u>penetrate</u> enemy anti-access and area denial systems throughout the depth of the operational framework to enable strategic and operational maneuver?
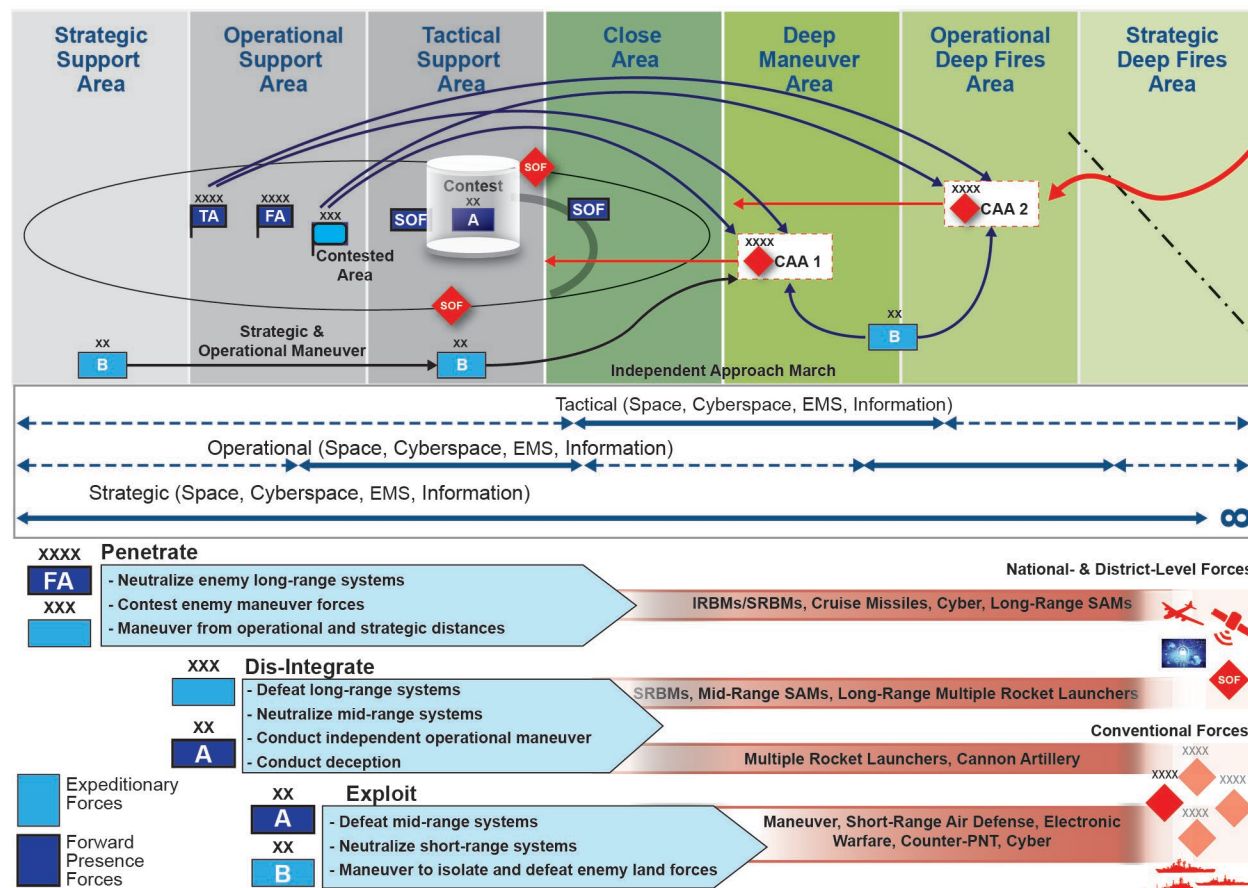

Figure 3-5. Penetrate and dis-integrate anti-access and area denial systems; exploit freedom of maneuver

b. The Joint Force utilizes the active engagement in competition to enable the penetration of strategic and operational stand-off by immediately neutralizing the enemy's long-range systems, contesting enemy maneuver forces in all domains, the EMS, and the information environment, and conducting strategic and operational maneuver. The neutralization of enemy long-range systems enables strategic and operational maneuver by reducing the threat to friendly lines of communications. Simultaneously, forward presence forces begin the defeat of enemy stand-off "from the inside" by operating within the range of enemy long- and mid-range systems. Together, these efforts effectively contest the enemy's attack; enable greater freedom to maneuver elements of the Joint Force from strategic and operational distances into the area of operations; and enable the dis-integration of the enemy's long- and mid-range systems in decisive spaces.

c. **Neutralize enemy-long-range systems.** Benefiting from extensive preparations during the competition period, forward positioned Army fires and air defense forces immediately begin neutralizing the enemy's long-range anti-access and area denial systems (ballistic and cruise missiles, long-range IADS) during the transition to armed conflict.

(1) The field army and corps employ long-range fires elements and integrate joint and combined capabilities to neutralize the enemy's long-range systems. Fires formations at those echelons provide responsive cross-domain fires to the Joint Force Commander into the Close, Deep Maneuver, and Operational Deep Fires Areas. In combination with other multi-domain capabilities, these fires begin to neutralize the enemy's integrated air defense and long-range fires systems. They accomplish this by receiving targeting information for high-priority enemy long-range systems from space- and high-altitude-based surveillance or low-observable air platforms, and striking those high-payoff targets within minutes (paragraphs 3-7.d and 3-7.e provide a more detailed description of how the enemy's long-range systems are identified and attacked).

(2) Ground-based long-range fires provide redundant strike options to the Joint Force, posing dilemmas for the enemy in multiple ways. Long-range ground fires offer a responsive strike capability (cued by intelligence within minutes), with the capacity to overwhelm point defenses and strike targets over larger areas. Long-range ground fires complicate enemy defenses by forcing the enemy to react to multiple forms of attack simultaneously against a number of different systems for which it does not have an effective counter. The Army's contribution of highly mobile and dispersed long-range fires systems also complicates the enemy's counterfire, reconnaissance, and targeting. By combining Army long-range fires with other multi-domain capabilities, the Joint Force increases the speed and scale of its efforts to neutralize the enemy's long-range systems.

d. **Contest enemy maneuver forces.** Forward positioned forces immediately contest the enemy attack by enemy maneuver forces. Depending on force posture and the amount of intelligence and warning, forward presence forces in the Close Area could vary in strength from a single brigade to an entire division of forward deployed, rotational, and expeditionary forces deployed by air prior to the conflict. When attacked, forward presence forces in the Close Area (partner territory that the enemy is attempting to seize), in concert with partner forces, impose losses on the enemy to delay its achievement of campaign objectives and consolidation of gains. Forward presence Army forces and partners employ layered ISR, both organic and joint, to develop an understanding of the enemy's attack and their capabilities. They also build on the counter-reconnaissance activities executed in competition to rapidly degrade enemy intelligence in the Close Area. The Joint Force Commander employs joint fires and national-level capabilities to assist forward presence forces denying enemy objectives in the Close Area and the field army executes IEO contingency plans to rapidly seize the initiative in the information environment.

(1) **See with layered ISR.** U.S. and partner forces in the Close Area employ a layered ISR network to determine the disposition of enemy forces. The layered ISR network provides redundancy against the enemy's ability to contest friendly ISR assets and facilitates layered collection and dissemination.

(a) **Layered collection plan.** Forward presence divisions and brigades employ their organic ground reconnaissance and UAS to develop the immediate tactical situation. The field army primarily relies on organic high-altitude surveillance and joint ISR capabilities deployed from the forward edge of the Tactical Support Area, supplemented by low-observable manned and unmanned aircraft, space surveillance, and cyberspace intelligence. The field army also utilizes an existing intelligence, surveillance, and reconnaissance network developed with partners during competition that consists of overlapping systems of remote and autonomous sensors, human intelligence, and friendly special operations forces.

(b) **Processing and dissemination.** The field army uses standard and non-standard communications methods to rapidly process and disseminate intelligence to maneuver forces in the Close Area and to sustainment and protection forces in the Tactical Support Area. The field army analyzes the intelligence and disseminates time sensitive combat information to the division and the brigades using resilient, low-density data formats to mitigate significant enemy jamming and counter-communications attacks. The field army also establishes sensor-to-shooter links to enable cross-domain fires in support of subordinate operations.

(2) **Degrade enemy intelligence effectiveness in Close Area.** Forward presence forces and partners target enemy intelligence capabilities to complicate the enemy's collection plan and force the reallocation of assets at multiple levels. The division and the brigades degrade enemy tactical ISR through a combination of air defense against manned and unmanned aerial ISR, camouflage, and decoys. Tactical deception plans complicate the enemy's intelligence collection and may force the enemy to adjust their ground attack. The theater army coordinates with the division and the brigades for active anti-space ISR measures to support maneuver forces at critical times and spaces. The degradation and reallocation of the enemy's ISR capabilities in the Close Area cause the enemy to divert ISR resources from targeting friendly forces in the Support Areas, thereby enabling strategic and operational maneuver.

(3) **Deny enemy objectives.** Forward presence maneuver forces and partner nation conventional forces use the advantages of the defense, particularly in dense urban terrain, to attrit and slow enemy forces and enable the arrival of friendly expeditionary forces. Army forces leverage their preparation during competition to harden friendly urban areas to slow enemy advances and complicate its maneuver. The division and brigades employ organic cross-domain maneuver (primarily fires and air defense, as well as EW and aviation if a division is present) in conjunction with joint and Army multi-domain capabilities from the Support Areas (see next section) despite degraded communications. The field army assists the division and the brigades by shaping the fight in the Close Area through the accomplishment of three enabling tasks.

(a) **Converge joint fires from Support Areas and national-level capabilities.** The field army (or corps) supports the division and brigades in the Close Area by contesting enemy maneuver forces with long-range fires and coordinating for joint multi-domain capabilities. The field army (or corps) identifies high-priority targets (IADS, SRBM, long-range MRL, and command and control) in the Close Area and either strikes the target or disseminates the information to the division or brigades for their own targeting. Theater and operational fires commands, employing long-range fires, are initially the primary means of striking high-priority targets within the Close Area from the Support Area. Attacking these high-priority targets

requires resilience in multi-domain command and control at each echelon, provided through redundant means of communications, flexible command relationships, and multi-domain control measures designed to withstand degraded communications. The field army (or corps) balances the enduring requirement to neutralize the enemy's long-range fires with providing direct support to the division and brigades defending and executing maneuver in the Close Area.

(b) **Employ deception in the Close Area.** The field army uses deception plans developed in competition to create tactical unpredictability for the enemy and prevent the full massing of enemy lethal and nonlethal effects in the Close Area. The deception plans also present the enemy with mixtures of real, exaggerated, and false capabilities, especially in cyberspace and the EMS. Divisions and brigades execute deception in the Close Area by having multiple options to defend so even if the enemy gains access to U.S or partner planning, it must disperse reconnaissance assets among multiple possible locations of units, logistics, and multi-domain command and control nodes.

(c) **Contest the information environment.** The Joint Force, through the field army, immediately contests the information environment through the execution of IEO contingency plans with a credible, compelling message to bolster friendly political will and deny enemy information warfare objectives. These plans include prepared messages and methods of delivery based on anticipated wartime conditions, such as disruptions to civilian media and energy networks. Commanders in the Close Area exploit opportunities to take the initiative with images and messaging regarding friendly successes, particularly contesting the enemy advance and the rapid arrival of expeditionary forces, and disseminates it to the field army to shape public perception and reinforce the Joint Force Commander's campaign in the information environment.

e. **Maneuver across strategic and operational distances.** Executing maneuver across strategic and operational distances builds friendly combat power and sets the conditions for the dis-integration of the enemy's anti-access and area denial systems and the exploitation of the resulting freedom of maneuver. Army expeditionary forces use joint strategic transportation and prepositioned equipment to enter the theater at multiple points within days or weeks of the enemy's attack. Joint forcible entry operations can be employed to open additional lines of operations or initial entry points to enable these actions. Forward presence forces and national assets degrade enemy long-range surveillance and reconnaissance to reduce the enemy's effectiveness in attacking the lines of communications. In the area of operations, the theater and field army mitigate the effects of the enemy's attack throughout the Support Areas by executing deception plans to further complicate the enemy's ISR collection, protecting and hardening Army prepositioned stocks (APS), and conducting deployment and sustainment in dispersed formations along multiple routes.

(1) **Degrade enemy long-range ISR.** The theater and field armies have the responsibility to degrade the enemy's long-range ISR systems targeting the Operational and Tactical Support Areas. In both areas, friendly forces defeat or degrade enemy long-range reconnaissance across all domains, the EMS, and the information environment.

(a) **Counter enemy SOF and human intelligence (HUMINT).** Host nation counterintelligence, military, and internal security forces provide the primary means for countering enemy SOF and HUMINT networks in the Support Areas. The theater and field armies' counterintelligence and HUMINT assets collaborate with the host nation to generate a threat intelligence assessment and provide intelligence and enablers such as aviation, signals intelligence, EW, and cyberspace assets, to enable host nation's efforts. Security force assistance brigades, SOF, and civil affairs units also contribute to the strong relationships required to counter enemy SOF and HUMINT.

(b) **Counter enemy space ISR.** Prompt action by the theater army deprives the enemy of its primary means of long-range surveillance and significantly increases friendly survivability in the Operational Support Area. During the transition to armed conflict, the theater army provides offensive space and counter-space control for all ground forces in theater through either its organic capabilities or through coordination for joint capabilities. Although the theater army is the coordinating echelon, subordinate units down to brigade-level have responsibility to identify points in time and space that require the employment of necessary space capabilities to protect critical assets or movements. Proactively countering enemy space surveillance is particularly important in the Operational Support Area because the large number of potential targets spread across a wide geographic area that exceeds the capacity of enemy strategic reconnaissance and HUMINT. Effectively countering the enemy's space ISR capabilities causes the enemy to either accept more risk with strategic reconnaissance forces or shift to commercial space surveillance. Both of these actions create exploitable vulnerabilities.

(c) **Counter enemy cyber ISR.** The theater and field armies direct cyberspace defensive teams to protect critical systems for sustaining and deploying forces in the Support Areas. This requires detailed knowledge of the theater's networks, particularly its transportation and sustainment functions that have links to partner commercial, civilian, governmental, military, and coalition systems. Army forces counter the enemy's cyber reconnaissance and attacks with deception and traps, creating confusion and multiple presentations of false friendly systems to probing enemy cyber teams.

(2) **Mitigate effects of enemy attacks in the Support Areas.** The theater and field armies mitigate the effects of enemy attacks in the Support Areas to enable the reception of expeditionary forces executing strategic and operational maneuver. Multi-domain forces in the Support Areas employ deception to cause the enemy to expend resources on decoys or targets that have moved; miss fleeting opportunities; or expend high-value capabilities on less important targets. APS are protected and hardened to allow the rapid integration of expeditionary forces and the generation of combat power. Army forces in the Support Areas build resilience and redundancy by dispersing critical deployment and sustainment capabilities in mixed clusters and gain residual protection from air and missile defense radars and launchers, aerial surveillance, and other specialized protection capabilities that they would otherwise not be allocated.

(a) **Employ deception in Operational and Tactical Support Areas.** The theater and field armies conduct deception to complicate enemy ISR in their respective areas. Similar to deception in the Close Area, deception plans for the Support Areas employ multiples means to disperse enemy surveillance and reconnaissance and present a mixture of real, false, and

exaggerated capabilities to increase operational unpredictability. The friendly forces' deception plan must be coherent across all domains, the EMS, and the information environment to effectively counter the enemy's multi-domain reconnaissance.

(b) **Protect and harden Army prepositioned stocks (APS).** APS sites are a critical component of calibrated force posture. Hardened APS sites provide protection, especially against cruise missile attacks. The main defense for APS sites, however, is the ability to issue the equipment or supplies to expeditionary forces quickly, which requires maintaining stored equipment at high readiness levels, rehearsing rapid fielding procedures with designated expeditionary forces, and stockpiling of critical supplies and munitions to enable immediate employment in large-scale ground combat operations.

(c) **Disperse deployment and sustainment.** The theater army executes deployment and sustainment along multiple, dispersed routes. Army expeditionary forces deploy from the homeland and other regions using joint strategic transportation and arrive at multiple points in theater, proceed forward along multiple routes, and then occupy dispersed tactical assembly areas within range of enemy anti-access and area denial systems. Aviation units employ split basing between the Tactical and Operational Support Areas, or in the case of division formations, between the Tactical Support and Close Areas. Aircraft and units rotate through a network of dispersed, austere locations in the Tactical Support and Close Areas. Sustainment draws on multiple sources for local procurement and prepositioned supplies, distributed through dispersed supply nodes operated by forward presence units. Intensive sustainment-level maintenance of aviation, ground and electronic combat systems, including battle damage assessment and repair is conducted within the Operational Support Area's lower threat environment. The Army postures redundant sustainment infrastructure forward, plans and prepares precision logistics support, and ensures the availability of additional expeditionary capacity through proper balance across the Active and Reserve Components.

f. **Conclusion: Penetrate.** The Joint Force penetrates strategic and operational stand-off by immediately neutralizing the enemy's long-range systems, contesting enemy maneuver forces in all domains, the EMS, and the information environment, and conducting strategic and operational maneuver. The key to penetration is the neutralization of the enemy's long-range systems in decisive spaces enabled by Army long-range fires. The neutralization of these systems creates conditions for friendly forces to contest the enemy attack in the Close Area and for expeditionary forces to conduct strategic maneuver into theater. This initial penetration denies enemy objectives, builds friendly combat power, and enables the corps to begin the dis-integration of the enemy's long-range systems (high-tier IADS, SRBMs, long-range MRLs) and mid-range systems (mid-tier IADS, standard MRLs, self-propelled artillery) in decisive spaces.

3-7. MDO in armed conflict: Dis-integrate the enemy's anti-access and area denial systems

a. Multi-domain problem #3: How does the Joint Force <u>dis-integrate</u> enemy anti-access and area denial systems in the Deep Areas to enable operational and tactical maneuver?

b. Dis-integration of enemy anti-access and area denial systems requires the defeat of the enemy's long-range systems, the neutralization of the enemy's mid-range systems, and conducting operational maneuver to begin the dis-integration of the enemy's mid-range systems. These actions do not constitute a discrete phase, but overlap with the execution of penetration (described in the previous section, 3-6) and exploitation (described in section 3-8). Essential to the dis-integration effort is continuous refinement of intelligence through multiple domains to enable the Joint Force to see or stimulate and strike the enemy's remaining anti-access and area denial systems. This intelligence enables the field army's defeat of enemy long-range systems, building on the neutralization that began in penetration. It also allows the corps to begin the initial neutralization of the mid-range systems (MRL and cannon artillery) to enable operational maneuver of friendly ground forces. Operational maneuver completes the dis-integration by stimulating the remaining enemy mid-range fires and fixing and isolating enemy maneuver formations, generating favorable force ratios for friendly maneuver forces. The resulting dis-integration places maneuver forces in position to conduct rapid exploitation at decisive spaces and defeat the enemy.

c. **Refine intelligence of enemy anti-access and area denial systems.** Army forces provide the foundation of intelligence collection and analysis in the Close and Deep Maneuver Areas. The field army and corps continue to use the layered ISR network consisting of unmanned sensors, special operations forces, human intelligence, and high-altitude surveillance. Friendly intelligence collection focuses initially on locating the several dozen long-range systems of each combined arms army that prevent friendly air and ground maneuver forces from closing with the enemy (mid-tier IADS, SRBM, and long-range MRL). As dis-integration operations continue, the focus shifts to identifying the most critical and vulnerable elements of the enemy's mid-range systems. The enemy protects its critical systems with camouflage, concealment, and deception, so the field army and corps must converge multiple types of sensors to acquire targetable intelligence. The key to converging capabilities across all domains, the EMS, and the information environment is high-volume analytical capability and sensor-to-shooter links enabled by artificial intelligence, which complicates enemy deception and obscuration through automatic cross-cueing and target recognition. The intelligence refinement required for dis-integration depends on five interrelated systems.

(1) **Wide area surveillance.** The field army and corps require persistent, wide-area surveillance throughout the depth of the battlefield that is responsive to operational and tactical intelligence demands. The enemy will attempt to degrade this capability through both active (jammers, dazzlers) and passive (decoys, camouflage) means. Persistent, wide-area surveillance, therefore, requires redundancy with a mixture of space-based and high-altitude systems to complicate enemy countermeasures. The field army and corps are the primary echelons for employing persistent, wide-area surveillance because they have the analytical capability and capacity, communications and data infrastructure, and authorities to process, exploit, and disseminate high-volume data.

(2) **Penetrating reconnaissance.** Fifth-generation fighters and other penetrating joint air reconnaissance provide responsive collection of targets cued by persistent, wide-area surveillance, which requires resilient communications with these aircraft and ground terminals to access the information for the field army and the corps.

(3) **Stand-off surveillance and reconnaissance.** Joint and Army stand-off air surveillance and reconnaissance supplements the collection effort by focusing on signatures that identify high-priority enemy systems, particularly electronic intelligence for IADS, and rapidly processing and disseminating (within minutes) this intelligence to attack fleeting targets.

(4) **Expendable surveillance and reconnaissance.** Joint and Army expendable surveillance and reconnaissance (low-cost UAS, artillery- and air-delivered unmanned sensors) refine target locations cued by other forms of intelligence and also provide a means to stimulate enemy air defenses to allow collection by another sensor.

(5) **Human networks.** Special operations forces and their human intelligence networks provide intelligence about high-priority targets and disseminate this intelligence through non-standard communications systems to SOF coordination teams at the field army and corps.

d. **Defeat enemy long-range fires systems.** Army long-range fires formations in the field army's theater fires command, reinforced by the corps' operational fires command as required, converge with other joint capabilities to destroy or suppress enemy long-range systems (SRBM, mid-tier IADS, anti-ship missiles, and long-range MRL). The field army, when given responsibility for multi-domain command and control against enemy long-range systems, converges both joint and Army capabilities into multiple see-strike or stimulate-see-strike combinations against enemy systems that target friendly air and ground forces. The more combinations of see-strike options the Joint Force presents, the more likely the enemy will conclude that it is impossible to counter or mitigate them all and slows its rate of fire to preserve its critical systems. This makes stimulating and seeing enemy systems more difficult, but achieves the larger effect of creating freedom of maneuver for the Joint Force. By causing the enemy to shift to a passive, cautious posture, friendly forces gain the operational initiative and begin the dis-integration of the enemy's anti-access and area denial systems.

(1) **Stimulate long-range fires systems.** Stimulating enemy long-range systems (e.g., IADS radars) makes them visible for detection and destruction under tactical conditions favorable to the U.S. and partner forces. Army forces stimulate through deception or offensive action. Stimulation through deception employs decoys mimicking the signature of friendly aircraft, vehicles, or command nodes. Stimulation through offensive action uses cyberspace attacks in conjunction with maneuver and air, naval, or ground fires. Although many of the capabilities that stimulate enemy long-range systems are joint, the corps must possess the ability and authority to employ them when it commands and controls operations against enemy long-range systems.

(2) **See long-range fires systems.** The primary method for identification of enemy long-range systems is wide-area, persistent space-based or high-altitude surveillance rapidly disseminating data to a field army or corps analysis cell employing artificial intelligence or other computer assistive technologies to analyze the high volume of data. This combination allows identification of high-priority targets on a "cluttered battlefield" filled with thousands of signatures from military and civilian sources and complicated by enemy attempts at camouflage, concealment, and deception. The alternate method of "seeing" is with fifth-generation fighters, cyber capabilities, SOF and HUMINT teams, or artillery- or air-delivered UAS sensors tipped to

a location identified by another intelligence source that provided a reliable but low-fidelity location. Seeing enemy long-range systems in conjunction with stimulation requires a sensor tailored to the target and its expected reaction. For example, a counterbattery radar or a high-altitude ISR balloon with infrared sensors senses enemy long-range MRLs firing at a decoy friendly command post. Regardless of the sensor type, converging stimulation and sensing requires rapid analysis and dissemination (within minutes) because the enemy reaction offers only a brief window of superiority to exploit.

(3) **Strike long-range fires systems.** The Joint Force generates cross-domain synergy to overcome point defenses protecting enemy long-range systems. The main Army strike capability against enemy long-range systems is long-range precision fires (LRPF). It is the lowest cost, lowest risk, and most responsive method to attack enemy targets as they are identified in the Deep Maneuver and Deep Fires Areas. LRPF does not require suppression of enemy defenses for access, can be ready to fire in case the precise time of engagement is unknown, and can engage opportunity targets over large areas. LRPF, however, is best suited for attacking stationary targets due to its long time of flight. Naval strikes and stand-off air strikes (air-launched cruise missiles and similar systems) have characteristics similar to LRPF. Fifth-generation aircraft are the primary means of engaging moving targets or those with reliable but low-fidelity location data that the aircraft and pilot can improve. The Army's persistent enabling of the Joint Force to stimulate, see, and strike the enemy's long-range systems results in the initial key task in dis-integrating the anti-access and area denial systems.

e. **Neutralize enemy mid-range fires systems.** While the field army suppresses or defeats enemy long-range systems, the corps focuses on destroying enemy mid-range fires systems (self-propelled artillery and standard MRLs).[37] This effort occurs simultaneously with the operational maneuver (next section), with the corps shifting resources between the two as necessary. The corps' operational fires command destroys enemy mid-range fires by converging multiple see-strike combinations of Army and joint capabilities. While the enemy has dozens of long-range systems in each combined arms army, they possess hundreds of mid-range systems. In comparison to the long-range systems, attacking the large quantity of mid-range systems requires simpler methods of convergence that can be executed more quickly and on a larger scale. Rather than stimulate individual enemy radars, batteries, or battalions through meticulously planned stimulate-see-strike combinations (as required for the long-range systems), the corps creates simpler, quickly repeatable see-strike combinations to neutralize the enemy's mid-range systems. Presented with this approach, the enemy mid-range fires formations face a three-fold dilemma: support their at-risk maneuver forces and risk destruction by U.S. fires; displace and risk detection and destruction; or remain inactive, thereby leaving their maneuver forces without support and risk eventually being outmaneuvered or isolated.

(1) **See mid-range fires systems.** The corps employs multiple sensors to see enemy mid-range systems, which cover a large area over the duration of the counterfire fight (several days). During such an extended period, the enemy will counter any single surveillance or reconnaissance method, so the corps must present a shifting array of multiple, layered sensors to complicate enemy counteractions. The corps' primary system for identifying enemy mid-range fires systems before they engage is persistent, wide-area high-altitude or space-based

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[37] With the division fires command, the division also has the capability to conduct a counterfire fight against enemy mid-range systems.

surveillance. The primary systems for identifying enemy fires as they engage friendly forces are counterbattery radars. Ground reconnaissance, unmanned and manned aerial systems, EW and signals intelligence units, SOF, space, and cyberspace reconnaissance forces augment these primary systems. In contrast with enemy long-range systems, which require the capacity to process a high-volume of data to find well-hidden but largely stationary targets, detecting mid-range fires systems is easier—a battalion volley of MRL creates a large signature—but requires fast processing and decision to strike the target before it displaces.

(2) **Strike mid-range fires systems.** The corps converges joint and Army capabilities against enemy mid-range fires systems. Destroying a large number of mobile systems requires simple, rapid forms of convergence, achieved by linking sensors directly to specific forms of strike. Air ISR cues air strike or ground fires; counterbattery radars and persistent, wide-area high-altitude surveillance cue ground fires; unmanned UAS cues attack aviation and ground fires. The ability of the corps to employ relatively simple air, space, and ground capabilities in layered combinations imposes greater complexity on enemy command and control systems without adding significant complexity to friendly actions. As friendly maneuver forces close within range of the mid-range systems, the division's fires will contribute to these strike efforts, especially against enemy mid-range systems able to effect march objectives and decisive spaces.

f. **Conduct operational maneuver.** Operational maneuver completes the dis-integration of the enemy's anti-access and area denial systems. The field army continues its defeat of the long-range systems, but transitions some capabilities to identifying high-value targets in the Close Area and either strikes them or rapidly disseminates the data to the corps to support their maneuver. The corps continues with its neutralization of mid-range systems and directs the division and brigades as they transit the Support Areas to the Close Area. The enemy will attempt to isolate and deny friendly maneuver forces support from adjacent units, multi-domain enablers, or higher echelons. Friendly maneuver forces, anticipating the implications of operating in such a contested environment, prepare to execute independent maneuver and practice intent-based synergy.

(1) Operational maneuver ideally occurs following the defeat of the enemy's long-range systems and the neutralization of the enemy's mid-range systems. To protect these critical systems, however, the enemy may employ them in a passive, but opportunistic posture capable of engaging friendly maneuver forces at critical places in either time or space. The corps and division, therefore, may have to maneuver forces in the Close Area and threaten to seize key terrain or isolate enemy maneuver forces to stimulate the enemy's mid-range systems.

(2) The corps and the division in the Close Area employ operational deception to fix enemy maneuver forces (a combined arms army or equivalent) and critical capabilities of their mid-range systems. The corps and division employ physical and virtual deception to generate uncertainty in the enemy's decision making, leaving forces or capabilities out of position or at a force ratio disadvantage relative to attacking friendly forces. Deception also prevents the enemy from gaining the full disposition of the friendly force and delays their recognition of decisive spaces. The corps also employs deception to stimulate the enemy mid-range system and enable its strike by multi-domain capabilities.

g. **Conclusion: Dis-integrate.** Operational maneuver, successfully executed, capitalizes on the neutralization of the enemy's mid-range systems to complete the dis-integration of the enemy's anti-access and area denial systems in decisive spaces. It also sets conditions for tactical success in the Close and Deep Maneuver Area by bringing sufficient combat power with momentum to bear in decisive spaces, ready to exploit opportunities. The dis-integration of the enemy's anti-access and area denial systems, however, is not a permanent condition. If given time, the enemy will regenerate the system through tactical adaptation, reorganization, and limited reconstitution. Because it is impossible to completely dis-integrate the entire anti-access and area denial capability of a near-peer enemy, commanders must exploit and enlarge windows of superiority to simultaneously complete the dis-integration of the enemy and further the exploitation of the resulting freedom of maneuver.

3-8. MDO in armed conflict: Exploit freedom of maneuver to defeat enemy objectives

a. Multi-domain problem #4: How does the Joint Force exploit freedom of maneuver to achieve strategic and operational objectives through the defeat of the enemy in the Close and Deep Maneuver Areas?

b. The Joint Force exploits the freedom of maneuver generated by dis-integrating the enemy's anti-access and area denial systems to defeat the enemy's mid-range systems, neutralize its short-range systems, and isolate and defeat enemy land forces through maneuver. Exploitation and maneuver sustains the penetration and dis-integration of the enemy's systems and enables the achievement of strategic objectives. The conditions for exploitation are achieved through MDO focused at decisive spaces. Army forces optimize the employment of multi-domain capabilities at decisive spaces and maneuver to dislocate the enemy's defense by physically, cognitively, and virtually isolating its subordinate elements, allowing friendly forces to achieve favorable force ratios and decisive tactical results. The physical, political, economic, social, and cultural importance of cities will often make them decisive spaces, critical to either denying enemy objectives or achieving friendly ones. The Joint Force, in dense urban terrain as well as all other terrain, links successful actions at decisive spaces to disrupt the enemy's operational plans, deny the enemy's strategic objectives, and, ultimately, achieve sufficient military superiority to attain friendly strategic objectives.

c. **Defeat the enemy's mid-range systems.** The corps continues to attack the enemy's mid-range fires during exploitation. The capabilities employed to see and strike are the same as those used to achieve the initial neutralization (see paragraph 3-7.e). The initial friendly success, however, will cause the enemy to attempt to preserve these systems by limiting their use and devoting greater effort to protection and survivability (e.g., more frequent survivability movements, greater dispersion). The combination of corps fires and division maneuver overcomes this enemy attempt to prevent the defeat of its mid-range systems, which are the most dangerous element of its tactical systems. Divisional maneuver compels the enemy to employ its remaining mid-range systems, which the corps' fires is ready to defeat. As the exploitation continues, the dislocation of the enemy defense caused by friendly maneuver offers increased opportunities to attack and overrun the enemy's fire and sustainment formations, completing the defeat of the enemy's mid-range systems at the decisive spaces.

d. **Neutralize the enemy's short-range systems.** The division converges a combination of capabilities across all domains, the EMS, and the information environment (e.g., attack aviation; UAS; short-range air defenses; EW; counter-position, navigation, and timing; cyberspace measures; fires; and maneuver forces) to neutralize the enemy's short-range systems. The division coordinates with the theater army for space control and space-based capabilities. The division coordinates with the field army (or corps if acting as Land Component Command) to integrate the division's organic air defense and aviation capabilities (to include UAS) with the joint air campaign. Although every echelon defends its own cyberspace, the senior tactical headquarters (field army or corps) allocates additional cyber defense teams to the division to neutralize the attacks that occur uniquely at short range. As the primary echelon responsible for managing the EMS, the division reinforces subordinate brigades with ground- and air-based EW capabilities, prioritizing support to air maneuver. The division supports the aviation brigade with both EW and fire support to suppress enemy air defenses and enable exploitation of tactical opportunities. The enemy has a significant number of short-range systems, which makes their neutralization essential to enabling maneuver.

e. **Maneuver to isolate and defeat land forces.** Divisions exploit freedom of maneuver by accessing joint multi-domain capabilities and employing their brigades at decisive spaces. The corps will play a significant role in supporting maneuver in dense urban terrain due to the increased need for converging joint and interagency capabilities. Ground forces that tactically overmatch the enemy are the foundation of the Joint Force's ability to exploit freedom of maneuver. Tactical overmatch is the product of adaptable, aggressive leaders and Soldiers organized in cohesive, well-trained formations; and aircraft, fighting vehicles, small units, and individuals with superior mobility, protection, and lethality. Divisions exploit the advantage of formation-level tactical overmatch by employing deception and maneuver to create favorable force ratios at decisive spaces. Divisions converge the abilities to see, deceive, and maneuver with multi-domain attacks against enemy communications, fires, and reserves. This convergence leads to breaking the physical, virtual, and cognitive cohesion of enemy formations, causing their defeat.

(1) **See.** Divisions and brigades employ their manned and unmanned air ISR, ground reconnaissance, and EW capabilities to see. These organic capabilities are supplemented by the corps, which analyzes data from high-volume sensors (e.g., space-based and high-altitude ISR) for subordinate echelons and translates that information to resilient low-volume data formats. This enables lower echelon units to access these intelligence sources even though they lack the analytical capability or communications links to exploit the sensors directly. The combination of organic reconnaissance and access to joint and national surveillance and intelligence provides commanders with additional options for sensing the enemy, which aids protection, deception, isolation, and maneuver.

(2) **Maneuver to isolate.** Divisions have primary responsibility for isolating enemy elements physically, virtually, and cognitively by converging air and ground maneuver, fires, EW, and deception. Additionally, divisions incorporate offensive space and cyberspace into this isolation of enemy elements by accessing these capabilities through the theater and field armies. The division fires command, combat aviation brigade, and coordinated air interdiction directed against enemy lines of communications, reserves, and adjacent units physically isolate maneuver

elements through fire. Division terrestrial and aerial EW capabilities coordinated with offensive space and cyberspace capabilities virtually isolate the enemy by disrupting enemy command and control systems with a particular emphasis on reconnaissance and fires. Friendly forces achieve both physical and virtual isolation through a combination of maneuver, the skillful use of terrain, exploiting the initiative, and deception to fix enemy reserves and adjacent units. The combination of physical, virtual, and cognitive isolation creates favorable force ratios for maneuver to exploit.

(3) **Maneuver to defeat.** The division is the foundational maneuver echelon. Divisions direct their brigades and Brigade Combat Teams to execute basic multi-domain convergence of maneuver, fires, EMS operations, and air support. Divisions employ brigades simultaneously to overwhelm the enemy through cross-domain fires and independent maneuver or in sequence to extend the duration of offensive operations. They can accomplish this even when isolated from higher headquarters for periods of time because of their organic fires, ISR, and ability to communicate locally with aircraft. Brigades integrate EW, medium-scale air operations, cyber attacks, and offensive space control into their maneuver. Independent brigades have the capability to conduct offensive operations for 72 to96 hours. Divisions and their brigades exploit tactical opportunities operating within the commander's intent to achieve decisive tactical results.

(4) **Maneuver in dense urban terrain.** Dense urban terrain poses a particular challenge to friendly exploitation of freedom of maneuver because it tends to slow the tempo of operations and consume significant quantities of supplies, enablers, and forces. In dense urban terrain, the division remains the foundational element of maneuver, but it will require additional support from the field army and corps to converge specialized capabilities and coordinate with multinational and interagency partners. If the commander decides to bypass dense urban terrain, then multi-domain capabilities can reduce the risk and cost of securing lines of communications through virtual isolation, use of unmanned sensors, and deception. In other instances, the Joint Force might enable coalition forces by augmenting them with multi-domain assets or capabilities. Army forces will fight in dense urban terrain when it is a decisive space due to its military, economic, or political value. Dense urban terrain offers increased possibilities for using cyberspace- and EMS-based weapons, but it also increases the requirements for using those capabilities precisely. Due to the potential for collateral damage to friendly forces or to civilian populations, the use of physical and virtual weapons will require detailed intelligence preparation, planning, and command oversight.

f. **Conclusion: Exploit.** The successful exploitation creates military conditions favorable to achieving strategic objectives. Rapid exploitation minimizes the strategic and operational cost to friendly forces and prevents the enemy from re-integrating its systems and consolidating gains in captured territory. In a conflict with a near-peer enemy armed with nuclear weapons, the operational exploitation, however, will conclude with some combination of policy, logistics, and resource constraints. Although the enemy's conventional forces will be severely degraded, it will retain cohesion and capabilities to remain a threat. If there is a period of extended political negotiation, the enemy will use the threat or limited resumption of conventional operations in conjunction with unconventional and information warfare to win diplomatic advantage and undermine the consolidation of gains by friendly forces. The Joint Force, therefore, might have

denied the enemy from achieving its objectives by penetration, dis-integration, and exploitation, but the full attainment of friendly strategic objectives requires a successful transition from conflict to return to competition.

3-9. MDO in return to competition: Re-compete to consolidate and expand gains

a. Multi-domain problem #5: How does the Joint Force re-compete to consolidate gains and produce sustainable outcomes, set conditions for long-term deterrence, and adapt to the new security environment?

b. The Joint Force and partners re-compete to retain and build upon the military advantages gained in conflict. In an operational environment where peer enemies have nuclear capacity, it is an unlikely expectation to hope for a vanquished opponent; some form of a return to competition and status quo is more realistic. The persistence and presence of ground forces allow the U.S. to consolidate gains and provide continuing deterrence until the adversary no longer seeks to overturn the outcome through a return to armed conflict. In the return to competition, Army forces conduct three concurrent tasks: physically secure terrain and populations to produce sustainable outcomes; set conditions for long-term deterrence by regenerating partner and Army capacity; and adapt force posture to the new security environment.

c. **Produce sustainable outcomes.** In the return to competition, the field army retains overall command of Army conventional combat forces in their area of operations. The primary mission of these forces is to retain the physical and psychological advantages over the enemy achieved during armed conflict and secure key terrain and friendly populations. If the expeditionary corps redeploys, the field army resumes the role of converging large quantities of capabilities against the adversary's remaining mid-range fires. The potential for conventional lethal operations to take place, either in sporadic clashes during the return to competition or through the return to armed conflict, requires the field army to continue intelligence preparation of the battlefield. Actions in cyberspace, however, will likely continue at a high intensity level similar to that of the armed conflict, because physical separation of the armies will not ensure that either will surrender access to cyberspace. Operations in the information environment will also continue as both sides seek to consolidate gains by influencing friendly and enemy civilians, militaries, and governments. Civil affairs activities support partner governments to re-establish essential services and governance. At the same time, the theater army supports joint and multinational irregular warfare against other proxies outside of the field army's area of operations and supports any allied corps or division deterring enemy conventional attacks outside the field army's area of operations. Taken together, these Army efforts at echelon consolidate gains rapidly and create a foundation for deterrence.

d. **Set conditions for long-term deterrence.** Army forces set conditions for long-term deterrence by regenerating and expanding both Army and partner capacity. Forward presence Army forces use defensive planning and preparation that deter a return to conflict as a means of building greater interoperability with partner forces. The field army also uses the relative freedom of maneuver in all domains, the EMS, and the information environment afforded by the post-conflict environment to set the conditions for a sustainable, advantageous calibrated force posture. The Army enables deterrence by rapid regeneration of munitions stockpiles, which will be severely depleted after even a relatively short campaign. Army forces assist the building or

regenerating of partner capabilities and capacity for self-defense against conventional and unconventional threats. SOF and security force assistance forces are essential to rebuilding partner capacity and strengthening deterrence. From the adversary's perspective, the Joint Force's and Army's actions show an increasing and enduring ability to counter aggression, demonstrated through robust exercises, cyber reconnaissance, and information operations. In combination, they renew and set conditions for long-term deterrence.

e. **Adapt to the new security environment.** Conflict causes significant changes to regional security environments. Army forces provide persistent presence to ensure the new security environment is advantageous for the U.S. and its partners. The theater and field armies coordinate with partners, joint headquarters, and Headquarters, Department of the Army to best adapt calibrated force posture to the new operational environment. Army forces retain the capability to immediately counter and rapidly renew offensive operations. Reserve component formations extend Army presence while allowing the regeneration of expeditionary readiness.

f. **Return to competition.** Through a successful transition from armed conflict to the return to competition, the Joint Force translates operational success in armed conflict to the attainment of strategic objectives. The consolidation of gains, reconstitution of friendly forces, and building capacity of partners enables long-term deterrence of renewed armed conflict. More importantly, the successful adaptation to the new security environment results in an overall improvement of the United States' strategic position.

Chapter 4
Conclusion

a. The *U.S. Army in Multi-Domain Operations* concept challenges Army leaders to visualize and conduct maneuver in fundamentally new ways that enable the defeat of Chinese and Russian systems. Convergence enables Army forces to compete with capable adversaries, and to penetrate and dis-integrate their anti-access and area denial systems—even when out-numbered—by attacking vulnerabilities in the enemy's military system. Convergence, however, will not be easy to achieve. Army headquarters must not only have the technical, intellectual, and doctrinal tools to execute multi-domain command and control, but rigorous joint and combined training to realize it. In this way, Army forces achieve intent-based synergy across all domains, the EMS, and the information environment to compete, penetrate, dis-integrate, exploit, and re-compete.

b. The Army organizes for MDO with echeloned formations that conduct intelligence, maneuver, and strike activities across all domains, the EMS, and the information environment.[38] Army formations maneuver by moving and linking capabilities in multiple or unexpected ways and sequences to defeat or destroy adversaries' military systems. This method of maneuver at echelon by Army forces overwhelms Chinese and Russian military systems at critical spaces

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[38] The *U.S. Army Functional Concept for Movement and Maneuver, 2020-2040* defines cross-domain maneuver as "the employment of mutually supporting lethal and nonlethal capabilities in multiple domains to generate overmatch, present multiple dilemmas to the enemy, and enable Joint Force freedom of movement and action."

with multiple dilemmas and massed effects, creating windows of superiority for the Joint Force to accomplish objectives.[39]

c. MDO requires the Army to develop or improve capabilities to contribute cross-domain options to the Joint Force, by:

(1) Calibrating force posture geographically and across all the Army components to defeat Chinese and Russian offensive operations in competition and to deter escalation to armed conflict.[40]

(2) Preparing the operational environment by building partner capacity and interoperability and setting the theater through such activities as establishing basing and access rights, prepositioning equipment and supplies, conducting preparatory intelligence activities, and mapping EMS and computer networks.[41] (Supported by Army Materiel Modernization Priorities: Army Network)

(3) Building partners' and allies' capacities and capabilities to defeat increasingly sophisticated Chinese and Russian -sponsored unconventional and information warfare.

(4) Preparing the operational environment for competition and conflict by building understanding of and capabilities in select urban areas of particular operational or strategic importance.

(5) Establishing precision logistics that provides a reliable, agile, and responsive sustainment capability necessary to support rapid power projection, MDO, and independent maneuver from the Strategic Support Area to the Deep Maneuver Area. (Supported by Army Materiel Modernization Priorities: Future Vertical Lift, Army Network)

(6) Establishing necessary authorities and permissions normally reserved for conflict or to higher echelons to operate in competition and rapidly transition to conflict effectively.

(7) Improving the capability to conduct MDO in dense urban terrain at all echelons through the development of tactics and capabilities to increase the accuracy, speed, and synchronization of lethal and nonlethal effects. (Supported by Army Materiel Modernization Priorities: Long Range Precision Fires, Next Generation Combat Vehicle, Army Network, Soldier Lethality)

(8) Supporting a credible U.S. information narrative through cross-domain actions that communicate and counter threats by Chinese and Russian reconnaissance, strike, combined arms, and unconventional warfare capabilities.

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[39] As an example, Army formations can maneuver—or assist Joint Force maneuver—as a reconnaissance action, fighting to gain intelligence, key terrain, and set conditions that enable strikes, rather than maneuvering only after passive intelligence collection, deliberate analysis, and precision strikes have prepared the battlefield for maneuver.

[40] The idea of calibrating and re-calibrating force posture globally aligns with the idea of "forming operationally coherent forces" as described in the Joint Concept for Rapid Aggregation.

[41] "Setting the theater" encompasses the actions to establish and maintain conditions to seize the initiative and retain freedom of action for a specific theater. These actions may occur outside of the theater, as well.

(9) Enabling commanders and staffs at each echelon to visualize and command a battle in all domains, the EMS, and the information environment and shift capabilities rapidly between domains and organizations to mass combat power against Chinese and Russian vulnerabilities. This requires new tools to more rapidly converge capabilities across the Joint Force, shifting training paradigms, and changing personnel and talent management practices. This also requires that Army formations be trained, manned, and equipped to leverage all available information, from national, joint, commercial, and Service repositories and libraries, or directly from collection assets seamlessly and in a time dominant manner. (Supported by Army Materiel Modernization Priorities: Army Network, Soldier Lethality)

(10) Providing to the Joint Force Commander multi-domain formations and systems that can converge capabilities to attack specific vulnerabilities in Chinese and Russian multi-layered, mutually reinforcing military forces and systems. This means creating commanders and staffs who have the means and ability to access and employ capabilities that reside across the Joint Force. (Supported by Army Materiel Modernization Priorities: Long-Range Precision Fires, Next Generation Combat Vehicles, Future Vertical Lift, Soldier Lethality)

(11) Providing to the Joint Force Commander with multi-domain formations that have systems, leaders, and Soldiers that are durable, can operate in a highly contested operational environment, cannot easily be isolated from the rest of the Joint Force or from partners, and able to conduct independent maneuver and employ cross-domain fires. This requires extended sustainability of systems and formations, and leaders and Soldiers who continue to operate effectively in austere environments and conditions. (Supported by Army Materiel Modernization Priorities: Long-Range Precision Fires, Next Generation Combat Vehicles, Future Vertical Lift, Army Network, Air and Missile Defense, Soldier Lethality)

(12) Consolidating gains through clear demonstrations of U.S. security commitments to partners through combined exercises, training, and other presence activities.

(13) Enabling and complementing land, air, and maritime capabilities with operations in space, cyberspace, and the EMS to support the opening of and exploitation of windows of superiority creating dilemmas for the enemy while protecting the ability to conduct friendly operations in degraded, disrupted, and/or denied operational environments.

(14) Attracting, retaining, and making maximum use of high-quality, physically fit, mentally tough Soldiers who have the skills and expertise to conduct MDO.

d. The *U.S. Army Multi-Domain Operations* concept drives experimentation; informs capability and doctrine development; and frames organizational trade-offs and force posture decisions that restore the Army's ability as part of the Joint Force to deter adversaries that utilize Chinese and Russian systems. MDO is at present an Army concept—informed by contributions from other Services and partners—describing Army contributions to and requirements for a joint campaign conducted alongside partners against near-peer adversaries. Future development of MDO will test the method of operations described in this edition of the concept in other scenarios and with even greater involvement from the Joint Force and partners.

Appendix A
Assumptions

A-1. Baseline Assumptions

a. The U.S. Army will remain a professional, all-volunteer force, relying on all components of the Army to meet future commitments.

b. The Army will adjust to fiscal constraints and have resources sufficient to preserve the balance of readiness, force structure, and modernization necessary to meet the demands of the national defense strategy in the mid- to far-term (2020 to 2040).

c. Except for an immediate response to a national emergency, the Army will conduct operations as part of joint, interagency, and multinational teams.

A-2. Fundamental assumptions

a. Adversaries will challenge U.S. interests by means and with ways below the threshold of armed conflict and short of what the U.S. considers war.

b. Adversaries can conduct armed conflict via regional campaigns with limited warning to seize limited strategic objectives and consolidate gains within days or weeks.

c. The proliferation of precision-guided weapons, integrated air defenses, cyberspace weapons, counterspace weapons, and other technologies allows an increasing number of potential adversaries to contest and hold at risk U.S. forces in all domains, the EMS, and the information environment at the tactical, operational, and strategic levels.

d. U.S. and partner political authorities will authorize and enable sufficient force posture and readiness levels to respond to and defeat near-peer adversaries if deterrence fails.

e. U.S. and partner governments will provide authorities for friendly forces to conduct operational preparation of the environment, as well as offensive EMS, cyberspace, space, unconventional warfare, and information environment operations to deter and defeat adversaries.

f. U.S. and partner government agencies, headquarters, and fielded forces will develop and sustain sufficient interoperability between Services, government agencies, and allies to conduct combined operations that deter and defeat adversaries.

g. Neither the U.S. nor adversaries will *employ* nuclear weapons. The use of such weapons would so significantly alter the strategic context that different operational approaches would be required. (This assumption does not mean that this concept ignores the *threat* of nuclear weapons. Army forces must be resilient against all possible forms of attack. Furthermore, commanders will have to account for the possibility of nuclear attack in formulating schemes of maneuver and accounting for the risk of escalation that might lead to operational restrictions on where and how the Joint Force operates.)

Appendix B
Key Required Capabilities

B-1. Introduction. This appendix lists capabilities needed to conduct MDO as described in this concept.

B-2. Required capabilities

a. To conduct MDO in a highly contested environment, Army forces require the ability to calibrate force posture geographically and across all the Army components to defeat Chinese and Russian offensive operations in competition and to deter escalation to armed conflict. (Supported by Army Materiel Modernization Priorities: Long-Range Precision Fires)

b. To conduct MDO in a highly contested environment, Army forces require the ability to prepare the operational environment by building partner capacity and interoperability and setting the theater through such activities as establishing basing and access rights, prepositioning equipment and supplies, conducting preparatory intelligence activities, and mapping EMS and computer networks. (Supported by Army Materiel Modernization Priorities: Army Network)

c. To conduct MDO in a highly contested environment, Army forces require the ability to build partners' capacities and capabilities to defeat increasingly sophisticated Chinese and Russian -sponsored unconventional and information warfare.

d. To conduct MDO in a highly contested environment, Army forces require the ability to prepare the operational environment for competition and conflict by building understanding of and capabilities in select urban areas of particular operational or strategic importance.

e. To conduct MDO in a highly contested environment, Army forces require precision logistics that provides a layered, agile, and responsive sustainment capability necessary to support operations from the Strategic Support Area to the Deep Maneuver Area. Precision logistics is enabled by: a sustainment enterprise resource planning decision support system with predictive analysis tools and the ability to resupply without request and/or redirect supplies based on priority; a real-time common operating picture viewable by commanders and logisticians at echelon; and significant demand reduction across the Total Force to lessen delivery requirements by as much as 50% and extend operational time and reach of formations.

f. To conduct MDO in a highly contested environment, Army forces require necessary authorities and permissions to operate in competition and rapidly transition to conflict effectively.

g. To conduct MDO in a highly contested environment, Army forces require the ability to conduct MDO in dense urban terrains at all echelons with tactics and capabilities that increase the accuracy, speed, and synchronization of lethal and nonlethal effects. (Supported by Army Materiel Modernization Priorities: Long-Range Precision Fires, Next Generation Combat Vehicle, Army Network, Soldier Lethality)

h. To conduct MDO in a highly contested environment, Army forces require the ability to support a credible U.S. information narrative through cross-domain actions that communicate and counter threats by Chinese and Russian reconnaissance, strike, combined arms, and unconventional warfare capabilities.

i. To conduct MDO in a highly contested environment, Army forces require the ability to enable commanders and staffs at each echelon to visualize and command a battle in all domains, the EMS, and the information environment and shift capabilities rapidly between domains and organizations to mass combat power against Chinese and Russian vulnerabilities. This requires new tools to more rapidly converge capabilities across the Joint Force, shifting training paradigms, and changes in personnel and talent management practices. This also requires that Army formations be trained, manned, and equipped to leverage all available information, from national, joint, commercial, and Service repositories and libraries, or directly from collection assets seamlessly and in a time dominant manner. (Supported by Army Materiel Modernization Priorities: Army Network, Soldier Lethality)

j. To conduct MDO in a highly contested environment, Army forces require the ability to provide to the Joint Force Commander multi-domain formations and systems that can converge capabilities to attack specific vulnerabilities in Chinese and Russian multi-layered, mutually reinforcing military forces and systems. This means building tactical formations and leaders that can think through, access, and/or employ capabilities that reside across the Joint Force. (Supported by Army Materiel Modernization Priorities: Long-Range Precision Fires, Next Generation Combat Vehicles, Future Vertical Lift, Soldier Lethality)

k. To conduct MDO in a highly contested environment, Army forces require resilient multi-domain formations with systems, leaders, and Soldiers that are durable, can persist in a difficult operational environment, cannot easily be isolated from the rest of the Joint Force or from partners, and able to conduct independent maneuver and employ cross-domain fires. This requires extended sustainability of systems and formations, and leaders and Soldiers who continue to operate effectively in austere environments and conditions. (Supported by Army Materiel Modernization Priorities: Long-Range Precision Fires, Next Generation Combat Vehicles, Future Vertical Lift, Army Network, Air and Missile Defense, Soldier Lethality)

l. To conduct MDO in a highly contested environment, Army forces require the ability to consolidate gains through clear demonstrations of U.S. security commitments to partners through combined exercises, training, and other presence activities.

m. To conduct MDO in a highly contested environment, Army forces require the ability to enable and complement land, air, and maritime capabilities with operations in space, cyberspace, and the EMS to support the opening of and exploitation of windows of superiority, creating dilemmas for the enemy while protecting the ability to conduct friendly operations in degraded, disrupted, and/or denied operational environments.

n. To conduct MDO in a highly contested environment, the Army must attract, retain, and make maximum use of high-quality, physically fit, mentally tough Soldiers who have the skills and expertise to conduct MDO.

Appendix C
MDO Supporting Ideas

C-1. Maneuver in MDO

a. Maneuver is the combination of movement and fires to achieve positions of advantage that defeats the enemy.[42] Movement is the adjustment of the physical location of a capability to another more favorable location. In addition to the physical effect of repositioning, movement usually produces cognitive effects on the enemy, as well. All military capabilities originate from a physical location and undergo movement (of some form) when employed, even those capabilities intended to produce cognitive or virtual effects. Fires are the destructive or disruptive effects a formation or asset produces on an enemy. Fires can produce a combination of physical, virtual, and cognitive effects on the enemy. Fires, even if they are particles or waves, must also travel through a domain to reach their intended target, which is also a physical location, even if the target is a computer or a human mind.

b. MDO requires fires and maneuver to operate within and across domains. Cross-domain fires and cross-domain maneuver exploit an opportunity from one or more domains intended to achieve an advantage in another domain.

(1) *Cross-domain maneuver* is the employment of mutually supporting lethal and nonlethal capabilities of multiple domains to create conditions designed to generate overmatch, present multiple dilemmas to the enemy, and enable Joint Force freedom of movement and action.

(2) *Cross-domain fires* is the integration and delivery of lethal and nonlethal fires across all five domains (land, maritime, air, space and cyberspace), the EMS, and the information environment.

c. Cross-domain maneuver and cross-domain fires are a realization that a commander must visualize and exploit the physical, virtual, and cognitive effects of maneuver and fires in multiple domains and environments over time. For example, a ground tactical formation must operate in (and potentially affect, if it contains appropriate cross-domain capabilities) the relevant air and maritime domains above or adjacent to its land-based area of operations, as well as understand cyberspace, EMS, information environment, and space activities that can impact friendly operations. Based on this visualization, the commander must converge organic and available Joint Force capabilities in time and at the proper place to identify, create, and exploit windows of superiority.

C-2. MDO framework

a. The operational environment, threats, and problems envisioned in MDO demand a framework that brings order to the complexities of a multi-domain environment. Because near-peer adversaries contest and can deny all domains, the EMS, and the information environment at extended distances, current and anticipated future problems exceed what could be assigned

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[42] An enemy force is defeated when it has temporarily or permanently lost the physical means or the will to fight. To defeat the enemy, joint forces destroy, dislocate, dis-integrate, and isolate enemy forces.

within a single area of operations under the current joint operational framework. The MDO framework must also account for all domains, extending to space and cyberspace, as well as the EMS and information environment, because activities in these domains across time produce tactical, operational, and strategic effects not captured by the existing joint framework.[43] An expanded multi-domain framework allows commanders to arrange operations in the emerging operational environment. The MDO framework (see figure 2-1) provides an expanded physical framework from which to reference actions across all domains, the EMS, and the information environment conducted by the Joint Force, partners, adversaries, and enemies.

b. Since the MDO framework is operational, it is also grounded in physical spaces. Abstract aspects more evident in some domains are also grounded physically, despite their predominantly immaterial presentations. At some point, all the abstract elements (cognitive, virtual, informational, and human) demonstrate their effects physically at a place or in an area through a system or people. Representing these elements in a physically based framework clarifies an already very complex multi-domain operational environment for commanders and staffs. The following description of the framework places all friendly and enemy activities and physical locations in categories of physical space as the fundamental visualization layer.

c. The areas in the MDO framework are defined by the mixture of capabilities (both friendly and enemy) available for use within each area. MDO take a different form in each area because the two contending sides have a different mixture of capabilities available for competing and fighting. Because of the expanded battlefield in which actions in one area can influence another, the breadth of the battlefield needs to be placed within a single, simple framework to illustrate these sometimes complex relationships. Though depicted geometrically for simplicity, the areas within the framework are not defined by geographic space or relationships. In some theaters, for example, a Deep Maneuver Area could be physically adjacent to an Operational Support Area due to the types of capabilities available to each side. The complementary nature of unique and interoperable Service capabilities provides the Joint Force multiple options to maneuver in areas inaccessible to single-Service and single-domain solutions. Previous depictions of the battlefield did not capture the full range of places and times that friendly and enemy capabilities interact in the current and future operational environment. This increased number of battlefield areas, expansion in geographic area, and extended time horizons are new features of MDO.

d. **MDO framework spaces**

(1) **Deep Fires Areas**: The Operational and Strategic Deep Fires Areas comprise the Deep Fires Areas. These areas are defined as the areas beyond the feasible range of movement for conventional forces but where joint fires, SOF, information, and virtual capabilities can be employed. Operational and Strategic Deep Fires Areas are differentiated by the types of capabilities that can, or are authorized, to operate in each area. These areas are either too far (beyond operational reach) for conventional maneuver forces to enter or they are prohibited by policy (such as an international border).[44] Therefore, operations in the Deep Fires Areas are

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[43] FM 3-0, C1 dated 6 Dec 2017 incorporates some of the ideas related to the framework proposed by this concept (pp. 1-29 to 1-35).
[44] In cases where policy restrictions create Deep Fires Areas, the areas might be geographically non-contiguous. For instance, in a counterinsurgency campaign the Joint Force might have full freedom of action within the host country but is allowed to use only virtual capabilities against the enemy sanctuary in a neighboring country. In that instance, the international border would represent the boundary between Close and Deep Fires Areas.

limited to whatever physical and virtual capabilities are permitted by law or policy and that can operate in the heart of enemy defenses. This limited accessibility and the inherent difficulty of operating deep within enemy territory place a premium on the ability to combine and employ whatever capabilities are available from across all domains, the EMS, and the information environment.

(2) **Deep Maneuver Area**: This area is the highly contested area where conventional maneuver (ground or maritime) is possible, but requires significant support from multi-domain capabilities; commanders must make a concerted effort to "break into" the Deep Maneuver Area. Because more friendly capabilities possess the range and survivability to influence or operate within this space than in the Deep Fires Areas, and because commanders can take advantage of the combination of fire and movement, there are many more options for Joint Force employment here than in the Deep Fires Areas. Moreover, the persistence of ground and maritime maneuver forces allows operations to persist for far longer than in the Deep Fires Areas, where effects will often be more transitory. In most anticipated campaign designs, many operational objectives are in the Deep Maneuver Area.

(3) **Close Area**: The Close Area is where friendly and enemy formations, forces, and systems are in imminent physical contact and will contest for control of physical space in support of campaign objectives. The Close Area includes land, maritime littorals, and the airspace over these areas. The new operational environment and improved enemy and friendly capabilities have expanded the Close Area. Operations in the Close Area require tempo and mobility in order to overcome these enemy capabilities through sufficiently integrated and concentrated combat power at the critical time and space. Characteristics of the Close Area present challenges to integrating cross-domain capabilities because of the reduced time available to access and employ enablers, such as centrally controlled, low-density capabilities. Commanders employ capabilities from all domains, the EMS, and the information environment, organic and external, in the Close Area to generate complementary effects of combined arms, but speed of action, coordination, and synchronization of effects place a premium on organic capabilities. Operations in the Close Area are designed to create windows of superiority for maneuver to defeat enemy forces, disrupt enemy capabilities, physically control spaces, and protect and influence populations.

(4) **Support Areas**: Collectively, the Support Areas represent that space in which the Joint Force seeks to retain maximum freedom of action, speed, and agility and to counter the enemy's multi-domain efforts to attack friendly forces, infrastructure, and populations. The nature of these threats varies with the adversary, though with current technology virtually all adversaries will have reach into the homeland (for example, through cyberspace, information warfare, agents, sympathizers, and space), even if only by using social media to undermine public support and encourage "lone-wolf attacks." The reach of regional powers is also growing and the most potent adversaries already possess multiple advanced cyberspace, space, and physical capabilities (air, naval, special operations, and/or missile forces) that can contest the friendly rear areas at all times. Though enemy capabilities will vary with the situation, a common requirement will be the need to ensure that responsibilities, resources, and authorities are properly aligned among echelons, functions, and political organizations. Consequently, the

Support Areas are divided according to friendly and enemy capabilities typically operating in each area.

(a) The Strategic Support Area: This area is the area of cross-Combatant Command coordination, strategic sea and air lines of communications, and the homeland. Most friendly nuclear, space and cyberspace capabilities, and important network infrastructure are controlled and located in the Strategic Support Area. Joint logistics and sustainment functions required to support MDO campaigning throughout competition and armed conflict emanate from the Strategic Support Area. The enemy will attack the Strategic Support Area to disrupt and degrade deployments and reinforcements attempting to gain access to the Operational Support Area and move to the Close Area, taking advantage of the reach of strategic lethal and nonlethal weapons, as well as special operations reconnaissance and strikes. Enemy engagements in the Strategic Support Area will drive a rapid tempo of friendly operations in other areas to seek decision and limit enemy options for escalation.

(b) The Operational Support Area: This is the area where many key Joint Force mission command, sustainment, and fires/strike capabilities are located; these can be land or sea-based. This area normally encompasses many entire nations, thus making the Operational Support Area an important space for friendly political-military integration. Due to the political and military importance of the Operational Support Area, the enemy targets this area with substantial reconnaissance, information warfare, and operational fires capabilities. Friendly units maneuvering in the Operational Support Area, therefore, are never out of contact. The Joint Force will enable friendly operations in this area by dedicating significant capacity during armed conflict to open windows of superiority in the Operational Support Area that enable friendly operations.

(c) The Tactical Support Area: This is the area that directly enables operations in the Close, Deep Maneuver, and Deep Fires Areas. Many friendly sustainment, fires, maneuver support, and mission command capabilities are in the Tactical Support Area. The enemy directs information warfare, unconventional warfare, tactical fires, maneuver forces, and even operational fires at friendly forces, populations, and civil authorities in the Tactical Support Area. Friendly units in the Tactical Support Area must be prepared to endure threat fires and defeat enemy ground force infiltration through and penetrations of the Close Area. Mobility and survivability are key requirements for friendly forces operating in or rapidly transiting this area.

C-3. MDO at echelon

a. **Theater army.**

(1) In competition and return to competition:

• Set conditions for competitive campaigning by working with joint and multinational partners to defeat information and unconventional warfare in countries away from the adversary's near abroad

● Translate tactical successes in defeating information and unconventional warfare by using aggressive competition as a means to deepen cooperation and improve the U.S.'s strategic posture in the region

● Deter armed conflict by building resilience in friendly command and control, sustainment, and other force generation capabilities located in the Operational Support Area, with a particular focus on enabling quick draw of APS

● Coordinate with partners on cyberspace defense of key logistics and transportation systems; develop resilience by creating back-up methods to ensure sustainment

● Set the theater intelligence architecture, provide access to theater collection and databases, conduct open source intelligence in support of IEO, establish intelligence partnerships, facilitate intelligence engagement, and provide counterintelligence in support of force protection in the Operational Support Area

(2) In conflict:

● Counter enemy SOF actions against the Operational Support Area through the provision of intelligence and enablers to partner security forces

● In conjunction with other components, provide ballistic and cruise missile defense for critical targets

● Enable joint maneuver in the Close and Deep Areas through long-range fires provided by the Theater Fires Command

● Coordinate offensive space control for Army forces

b. **Field army.**

(1) In competition and return to competition:

● Set the campaign through focused tactical and technical intelligence on critical adversary military systems that then drives war and deployment plans, training, and resource decisions

● Set the campaign through creation of multi-layered ISR belts in likely areas of enemy aggression

● Coordinate with the Air Component to ensure continuity of support in the Close Area

● Set conditions for competitive campaigning by working with joint and multi-national partners to counter information and unconventional warfare in countries most threatened by the adversary

• Translate tactical successes in countering information and unconventional warfare by using aggressive competition as a means to deepen cooperation and improve the U.S.'s strategic posture in the region with most threatened partners

• Deter armed conflict by building resilience in the Tactical Support Area so that U.S. and partner forces can stage a credible force within range of adversary anti-access and area denial systems

• Orchestrate actions with information environment operations to counter adversary narratives in the most threatened partner countries

(2) In conflict:

• Counter enemy SOF actions against the Operational Support Area through the provision of intelligence and enablers to partner security forces

• Employ Army high-altitude ISR platforms to develop stand-off intelligence of enemy mid-range IADS and fires

• Coordinate complex joint convergence (air and naval strikes, cyberspace) in support of corps scheme of maneuver or on behalf of subordinate echelons

• Be prepared to assist theater army with enabling joint maneuver

c. **Corps.**

• Coordinate complex joint convergence if no field army present

• Employ divisions simultaneously to overwhelm enemy or in sequence to extend the duration of operations

• Provide access to subordinate echelons by tailoring high-volume intelligence requiring significant analysis capacity and communications bandwidth to manageable data

d. **Division.**

• Coordinate complex electromagnetic and information operations convergence

• Employ brigades simultaneously to overwhelm enemy or in sequence to extend the duration of operations

e. **Brigade.**

• Coordinate simple convergence of maneuver, ground, and air internally and be able to integrate complex convergence into scheme of maneuver with the assistance of higher echelons

- Conduct independent maneuver based on intent and employing internal convergence and resilience if physically and virtually isolated

C-4. Convergence considerations

a. Physical, virtual, and cognitive capabilities across the domains, environments, and functions often possess substantially different time characteristics that govern how they can be employed. When creating and exploiting windows of superiority, commanders must visualize and execute combined arms maneuver in new ways because the varied characteristics of different capabilities that must be converged at a place or places to achieve a purpose impose unique time considerations to operations. The Joint Force and its partners must also reconsider time in terms of converging actions during competition to achieve objectives without resort to, but also through transition to, armed conflict and a return to competition. To support converging capabilities in time and purpose at decisive spaces, MDO proposes five elements—preparation time, planning and execution time, duration time, reset time, and cycle time—to visualize the convergence of capabilities. Preparation time is the time required to produce conditions required for a capability's employment. Planning and execution time is the time required to initiate movement combined with the time required to move or transmit to the objective. Duration time is the time that a capability produces the intended effect. Reset time is the time required to regenerate a capability between employments. Cycle time is one iteration of planning through reset time. Understanding time is both art and science as elements of time for some capabilities, such as planning and execution time for a ballistic missile attack, can (or must) be known with great certainty while other aspects, such as duration of a cyberspace effect, can only be estimated.

b. At the operational level, MDO requires the modulation cycles and usage rates. There is an art and a science to the application of convergence. Perfect synchronization is generally unobtainable due to operational constraints. Additionally, utilizing all available assets at once may not support desired operational outcomes. Some assets have limited-use timeframes and must be held back for when the application has the highest payoff. Commanders will invariably accept less-than-perfect multi-domain synchronization in order to maintain a higher tempo. The mission dictates campaign tempo, not domain synchronization.

c. Figure C-1 provides general characteristics for the four cycles (ground, air, maritime, and enduring virtual weapons).

Cycle Type	Build-up Time (if not already present in theater)	Persistence When Employed	Reset Interval
Ground.[45]	Very long (months)	Long (days)	Long (days to weeks)
Air	Short (days)	Short (hours)	Short (hours to days)
Maritime	Medium (weeks)	Very long (months)	Very long (weeks).[46]
Enduring virtual weapons (cyberspace/space/EW)	Short (days).[47]	Very short (seconds to minutes)	Very short (minutes to hours).[48]

Figure C-1. Characteristics of the ground, air, maritime, and enduring virtual weapons cycles

d. The two usage rates are preferred munitions and expendable virtual weapons. As opposed to the cycles representing capabilities that can be continually used so long as they do not suffer attrition, the two usage rate categories decrease with use. Due to the significant time required to replenish these stockpiles when compared to the anticipated usage, it is only a slight oversimplification to regard them as essentially a fixed arsenal that must be carefully managed. Losing the "battle of the burn rates" and thereby being forced to severely curtail the use of preferred munitions or expendable virtual weapons while the adversary still has significant quantities would put the Joint Force at a severe disadvantage. Put differently, failing to manage usage rates in conjunction with the four cycles nullifies MDO and effectively returns one side to the 20th century while their better-supplied (or more judicious) enemy retains 21st century capabilities.

e. In conjunction, the limits of the four cycles and two usage rates define the art of the possible at the operational level. The Joint Force Commander's allocation of resources and risks within each establishes the tempo of the campaign. There is no fixed relation among these cycles and usage rates; the proper balance will vary according to the situation. The essential takeaway is that the degree of multi-domain capability will vary over the course of a campaign. Tactical commanders should not assume that all domain capabilities will be available at any given time.

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[45] For instance, the deployment of a division with some combination of Stryker and Armored Brigade Combat Teams would require several months, particularly against an adversary capable of contesting strategic lines of communications. In a deliberate offensive operation, the division might be able to sustain operations for several days before culmination. Depending on the attrition and expenditure of stocks, it could then require days or weeks to reset before a similar effort.

[46] Reset refers to out-of-theater replenishment, such as is required for reloading vertical launch tubes. If the reset requires repairing significant battle damage, then it could extend to months or years.

[47] This category covers a large array of capabilities for which it is difficult to make generalizations. This rating envisions a capability with a small set of personnel and equipment that could be rapidly deployed by air. Some capabilities in this category are global and so have no build-up time. Others might require technical infrastructure that could require weeks or months to put in place.

[48] Again, it is difficult to generalize about this broad array of categories. Decades of experience with EW suggests that unlike the other cycles, the reset interval will often not be the limiting factor of use. Cold War doctrine did not envision continuous jamming but intermittent use tied to the scheme of maneuver in order to maintain survivability, security, and effectiveness of EW assets.

C-5. Information environment operations (IEO).[49]

a. Information operations is the current terminology used by the Department of Defense (DoD) for operations in the information environment. To support MDO, information operations must evolve to IEO. IEO synchronizes information related capabilities (IRC), in concert with operations, to create effects in and through the information space.[50] IRC advance the commander's intent and concept of operations; seize, retain, and exploit the initiative in the information space; and consolidate gains in the information environment, to achieve a decisive information advantage over enemies and adversaries. IEO can provide commanders additional ways and means to:

- Degrade, disrupt, or destroy threat capabilities that inform or influence decision making.

- Degrade, disrupt, or destroy threat capabilities that command and control maneuver, fires, intelligence, communications, and information warfare capabilities employed against friendly forces.

- Protect friendly information, technical networks, and decision-making capabilities from an exploitation by adversary/enemy information warfare assets.

- Influence enemy formations and populations to reduce their will to fight.

- Influence friendly and neutral populations to enable friendly operations.

b. In support of MDO, IEO must be fully integrated into the planning and execution of the joint targeting process. When converged with other capabilities, IEO directly supports opening and exploiting windows of superiority during competition and armed conflict. The military capabilities that contribute to IEO which should be taken into consideration include: strategic communications, joint and interagency coordination, public affairs, civil-military operations, cyberspace operations, information assurance, space operations, military information support to operations, intelligence, military deception, operations security, EMS operations, and military and civilian engagement.

c. Commanders must understand the information space and determine how enemies and adversaries operate in that environment. Understanding begins with analyzing the adversary/enemy's use of the information space and how it employs IRC to gain an advantage. It continues with determining threat vulnerabilities that friendly forces can exploit and identifying areas which must be defended against adversary/enemy IRC.

d. IEO provides commanders an implementation strategy and integrative framework for employing IRC. An integrated IEO campaign may include the use of the cyberspace domain, the space domain, and the EMS to deliver IEO products, observe enemy or adversary actions and

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[49] IEO is the integrated employment, during military operations, of information related capabilities (IRC) in concert with other lines of operations to influence, deceive, disrupt, corrupt, or usurp the decision making of enemies and adversaries while protecting our own; to influence enemy formations and populations to reduce their will to fight; and influence friendly and neutral populations to enable friendly operations.

[50] For purposes of this concept, the information space refers to the complex system of interrelated and networked information flows amongst and between populations that a commander must understand and consider to gain and maintain freedom of action.

reactions, or to deliver cyberspace, space, or EW effects. Integrating cyberspace, space, and EW capabilities generates synergistic information space effects. When employed as part of IEO that includes multiple IRC; intelligence, cyberspace, space, and EW operations can provide commanders an alternative solution to challenging operational problem sets.

C-6. Engagement[51]

a. Since war is fundamentally and primarily a human endeavor, the Joint Force working with its partners, must address the cognitive aspects of political, human, social, and cultural interactions to achieve operational and national objectives. Employing engagement, the Joint Force and its partners synchronize activities to understand, influence, and achieve human interactions which cross all domains, the EMS, and the information environment to achieve a position of relative advantage during competition or armed conflict. Engagement enables U.S. forces to outmaneuver an adversary cognitively as well as physically and virtually to deter, counter, and deny the escalation of violence in competition, and defeat the enemy if armed conflict cannot be avoided. Additionally, through engagement, routine contact and interaction between the Joint Force and its partners build trust and confidence, share information, coordinate mutual activities, and maintain influence.

b. Employing the operational tenets of engagement presents multiple dilemmas to an enemy, converging multi-domain capabilities that will create windows of superiority for friendly forces.[52] In the best case, engagement activities can strengthen U.S. options and measures in competition, and avert or deter armed conflict. However, if armed conflict cannot be avoided, engagement provides a deeper and common understanding of the operational environment, and enables opening windows of superiority and turning denied spaces into contested spaces.

c. A cognitive window of superiority is created by degrading, disrupting, or otherwise manipulating a decision maker's understanding and decision cycle or influencing a formation's or population's will to establish favorable conditions. Achieving cognitive windows of superiority requires careful consideration of the following tenets:

- Understand human factors of the operational environment[53]

- Incorporate human factors into campaign and operations planning, training, and exercises

- Build partner operational, institutional, governance, and expeditionary capabilities, and joint, interagency, and multinational partner networks

- Operate with and through joint, interagency, and multinational partners and indigenous populations to shape the operational environment and conduct security activities

[51] Engagement is the combination of physical, informational, and psychological actions taken to influence actors' decision making (moral and mental).
[52] Some examples of these dilemmas include: security cooperation activities can strengthen an ally's defensive capabilities and resolve; civil affairs operations can help influence a population positively toward U.S. presence and operations; military information support to operations can shape an enemy's will to fight; interactions with the host nation can develop valuable situational understanding.
[53] Human factors are the physical, cultural, psychological, and behavioral attributes of an individual or group that influence perceptions, understanding, and interaction.

Appendix D
MDO in Dense Urban Terrain (DUT)

D-1. Introduction

a. **Purpose.** This appendix applies MDO ideas and solutions to a dense urban terrain. It provides a description of the problems encountered in DUT and implications for MDO. The ideas and solutions found in this appendix use historical and current urban conflict analyses across a collection of sources, but are informed primarily from the Mosul Study Group Phase II literature review, research, and campaign analysis.

b. **Background.** National defense documents focus on the evolving threat and the changing character of warfare identify urbanization trends that portend future competition or conflict with the evolving threat will take place in urban environments. Particularly problematic is the potential for competition and armed conflict in megacities.[54] These areas involve diverse, interconnected human and physical networks, three-dimensional engagement areas, and terrain and infrastructure that provide varying levels of ready-made cover and concealment. Urban operations are inherently multifaceted. The scale and complexity posed by megacities challenge Army forces' capabilities and capacities to compete with, operate and fight versus prepared adversaries.

D-2. Dense urban terrain

a. **Characteristics of dense urban terrain**. Dense urban terrain possess unique characteristics that complicate all aspects of friendly and enemy operations, to include competition below the threshold of armed conflict, penetration and dis-integration of an adversary's anti-access and area denial systems, exploitation of freedom of maneuver to defeat enemy forces, and consolidation of gains. The physical characteristics (e.g., scale of urban area, urban density, and infrastructure) constrain maneuver, limit situational understanding, and create unique problems for targeting and delivering effects against enemy positions. Cognitive characteristics (e.g., degree of internal and external connectedness, demographics of the human terrain, institutions, and governance) influence political decisions, which in turn shape operations, rules of engagement, and narratives. Finally, operational characteristics in DUT (e.g., the type of enemy, degree of joint access, mission, and type of combined force) drive force and capability requirements.

(1) Physical. Physical characteristics of DUT effect all aspects of competition and armed conflict. Man-made terrain and natural barriers combine to fragment and frustrate maneuver operations. The density and diversity of structures obscure enemy positions and strength, challenge friendly communications, and, when destroyed, create rubble causing mobility and countermobility problems. Large groups of non-combatants complicate maneuver and fires operations, overwhelm rear-area capabilities, and create challenges to intelligence collection and

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[54] The number of megacities (defined as metropolitan areas encompassing more than 10 million inhabitants) has doubled in the past 20 years and is projected to double again by 2050. Megacities contain populations, and exercise political, economic, and social influence comparable to many nation-states.

analysis. Each city presents its own challenges but all urban operations require extensive force commitments both for combat and stability operations.

(2) Cognitive. Cognitive considerations consist of the flow of people, goods, and data in and between dense urban areas. The interrelated flow of people, goods, and data creates environmental complexity, which congests and complicates the use of all domains, the EMS, and the information environment. The unique physical and cultural design of each urban area influences its internal flow. Function – centered on formal or informal institutions of governance – connects and informs flow relative to the rest of the country, region, or globe. The networking of urban environments on a regional or global scale has expanded the influence of population centers and the impact of urban operations on political, economic, and social systems. These characteristics present commanders and staffs with a constantly changing operational picture to assess making intelligence gathering and effects planning (lethal or nonlethal) difficult.

(3) Operational. Regardless of location or type of operation, in dense urban terrain the Army usually operates in unfamiliar and complex terrain in support of a partner force or local government objectives. This requires that the Army understand mission requirements, coalition and host nation security force capabilities, and return to competition objectives. These three considerations inform force size, logistics, and set the theater requirements. The force requirement for any mission (offense, defense, stability) is greater in DUT than in any other environment. Partner force and coalition members influence rules of engagement and determine the support or enabling capabilities required to facilitate movement and maneuver in urban areas. Finally, return to competition objectives impact consolidation of gains operations, which in DUT can require the generation of extensive stability forces.

b. **Compounding and compressing the problems**. During armed conflict, urban areas both compound the friction of war and compress physical and temporal spaces. Dense urban terrain compounds friction by combining more obstacles to maneuver (people, terrain, congested EMS and airspace) and by requiring the simultaneous execution of more tasks (airspace and fires de-confliction, protection, lethal and nonlethal fires synchronization) to enable constrained maneuver. To execute more tasks simultaneously, the Army must deploy more forces and capabilities into urban areas, which compresses the physical and temporal space available for operations. The phenomenon of increased friction and compressed space complicate the execution of core competencies, which demands greater focus and discipline from tactical and operational units. This reduces individual Soldier, unit, and staff bandwidth for the incorporation of new technologies introduced during conflict.

D-3. Operating in dense urban terrain

a. **Challenges in dense urban terrain**. There are several challenges to operating in DUT, including:

(1) Constraining offensive maneuver operations by requiring the attacker to expend force and energy either to secure lines of communications in the vicinity of a bypassed city or to enter and clear the city.

(2) Obscuring operations and forces (physical and cognitive).

(3) Increasing requirements for combat power to maintain operational reach, sustain relative advantages, prevent early culmination, and enable stability operations.

(4) Requiring the synchronization and integration of lethal and nonlethal effects in congested and contested spaces.

(5) Challenging the ability to seize the initiative, and dictate operational tempo as a result of greater friction and attrition.

(6) Sustaining friendly forces in widely dispersed locations to include providing medical and mortuary affairs support/evacuation.

b. To set politically favorable conditions for conflict, in competition an adversary will focus information warfare and unconventional warfare operations on targeted populations and influential DUT. During the transition to armed conflict, adversary forces will rapidly seize vulnerable urban areas to enable swift consolidation of gains and protection of lines of communications. Dense urban terrain's advantages thus lay in the potential for providing early warning and slowing enemy operational tempo. To capitalize on these advantages, the Army must understand, organize, and train to operate in strategically and operationally significant urban areas.

(1) Understanding dense urban terrain in competition. To best understand DUT in competition, the Army should position forces in operationally and strategically significant cities. The placement of Army forces in cities, however, is likely to cause political complications. Regardless, understanding urban areas during competition requires a grasp of the characteristics of DUT described above, and the best ways to employ urban terrain defensively during conflict. Dense urban terrain provides early warnings of enemy intent, or partner nation activities likely elicit a military response from the enemy (such as anti-Russian rallies in Kiev in 2014). Understanding the flow of people and ideas enables the Army to identify major environmental changes, which is essential to understanding DUT in competition. This level of understanding requires technical collection means, but is largely achievable through physical presence (e.g., HUMINT and SOF) and the collection of open source data, particularly from social media. By developing an understanding of the cognitive and operational characteristics of DUT during competition, the Army gains an initial advantage in armed conflict.

(2) Understanding dense urban terrain in conflict. Once conflict starts, the urban environment becomes increasingly dynamic, which quickly erodes initial advantages in understanding. Gaining or maintaining an understanding of an urban area during conflict requires considerable technical means to enable collection, analysis, and display of multi-domain data. Joint and partner nation collection means, primarily mechanical sensors, must saturate the terrain and airspace above a city. This enables collection of immense amounts of data regarding the physical, cognitive, and operational characteristics of DUT. From the large volume and various forms of collected data, intelligence analysts must synthesize and isolate information critical to operations and decision making. Then, to enable the rapid action against smaller and

easily concealed forces, mission command systems must display analyzed data in near real-time. Technical understanding of DUT in conflict serves two primary purposes. First, it provides units with situational awareness of the immediate area. Second, mechanical sensors enable intelligence collection that supports targeting and shaping operations. Establishing and maintaining situational awareness in DUT, however, consumes considerable resources, which challenges Army capability and capacity to collect and processing, exploitation, and dissemination of intelligence, which necessitate artificial intelligence-enabled processes.

(3) Organizing for operations in dense urban terrain. No single military Service or Army unit is capable of unilaterally operating in DUT during competition or conflict. During competition, the Army relies on host nation and whole-of-government approval and support for its presence and operations. During conflict, the Army supports host nation operations in urban environments to mitigate political risk and reduce operational costs for U.S. forces. Dense urban terrain operations also require considerable synchronization of joint capabilities and integration of conventional and special operations forces. Further, maneuver units must create combined arms teams with a mixture of engineer, armor, infantry, and artillery forces. This enables movement to and through urban areas, and penetration and clearance of physical structures. Disaggregated maneuver units move along splintered axes of advance and conduct distributed operations, which require more sustainment and maneuver support resources. To understand and support DUT operations, echelons above brigade must streamline processes to enable faster more precise communications, decision making, and enabler support. Finally, urban operations require extensive Joint Force generation and logistics, which depend on a robust theater army and enabling commands to set the theater during competition.

(4) Training for operations in dense urban terrain. The Army must train at echelon for urban operations. Successful urban operations are predicated on the ability to conduct three essential tasks. First, multi-domain isolation of an urban area to control logistics and communications. Second, penetration of the hardened exterior boundary and internal structures of an urban area. Third, the ability to gain and maintain contact with the enemy once inside DUT. Although effective tactical engagement is an important aspect of these tasks, operational and strategic actions ensure victory in urban battles. Field armies and corps train to manage the political conditions and operational tasks associated with isolating urban areas. Field armies and corps, in conjunction with divisions, train to plan and execute rapid maneuver operations. These units must also train to set the sustainment infrastructure required to project and maintain combat forces, should urban combat require deliberate house-to-house clearance operations. At and below the division level, maneuver units train to penetrate and operate in urban terrain. Divisions train to support maneuver units by coordinating force generation and projection, sustainment, and joint effects integration. Brigades and below train to penetrate urban terrain, and gain and maintain contact with the enemy in this complex environment.

(5) Operating in dense urban terrain. As an expeditionary force, the Army primarily operates in urban areas during natural or man-made disasters. This has conditioned the Army to visualize urban operations in conflict terms defined by minimal understanding and offensive or stability actions. Dense urban terrain, however, is increasingly a competition space, which provides the Army an opportunity to deter conflict. By operating in DUT, the Army can better understand enemy intentions and coordinate training exercises to confront aggression and

conduct IEO and special operations to deter escalation. In conflict, urban areas support defensive operations against larger, more sophisticated forces, but remain vulnerable to isolation. During offensive operations, DUT constrains maneuver and slows operational tempo requiring additional forces. Finally, stabilizing or consolidating gains in urban areas, particularly partner nation capitals and DUT surrounding critical air and sea ports, is essential to securing lines of communications and political support for all operations.

   c. **The tenets of MDO applied in dense urban terrain.**

   (1) Calibrate force posture. Calibrated force posture for DUT operations requires preparation during competition. Actions in competition focus on visualizing urban environments in enough detail to anticipate their unique force generation, sustainment, and intelligence requirements during conflict. This enables theater and field armies to effectively set the theater.

   (a) Forces. U.S. forces must focus on prepositioning theater enabling commands (TEC) that support intelligence, fires (lethal and nonlethal), sustainment, and mission command functions. Intelligence and Security Command (INSCOM) is the Army's operational intelligence arm. Through the Military Intelligence Brigade-Theater (MIB-T), INSCOM enables the geographic combatant command (GCC) to focus collection efforts on operationally and strategically significant urban areas. Lethal and nonlethal fires TEC allow GCC to synchronize joint effects during initial phases of conflict operations. Operational control measures that will be required to converge lethal and nonlethal fires in DUT areas can be established and rehearsed in competition. Sustainment TEC develop pre-conflict estimates and pre-coordinate contracting requirements needed to maintain forces executing deliberate urban operations. Finally, mission command requires headquarters elements to command and control, exercise authority, and provide direction. Signal TEC provide the network capability and capacity to support coalition operations in congested and contested communications space. Signal TEC also enable the distribution of massive amounts of intelligence and information flowing from the DUT. Setting the theater with enough intelligence, fires, sustainment, and mission command capability provides GCC with the capacity to visualize critical urban areas during competition, and transition to conflict when required.

   (b) Footprint. An increase in forward presence forces requires a commensurate increase in the forward footprint (facilities). Basing and infrastructure to accommodate in-theater forces must enable joint and combined operations in urban operations. APS also need to be evaluated and adjusted to support U.S., partner, or allied maneuver, fires, sustainment, and force protection operations in urban areas.

   (c) Agreements. Agreements with partner nations and allies must account for force and footprint requirements, and for increased intelligence and information gathering activities in specific urban areas. If U.S. forces intend to understand DUT during competition, activities such as IPB or operational preparation of the environment will increase and likely require Department of the State awareness, if not concurrence. IPB or operational preparation of the environment is best conducted in collaboration with the host nation. Additionally, joint and coalition forces must establish urban specific rules of engagement during competition to inform set the theater requirements and enable a rapid transition to armed conflict.

(2) Multi-domain formations. Since dense urban terrain operations attrit forces at a higher rate than operations in other environments, formations, systems, and Soldiers that provide the combination of capacity, capability, and endurance necessary to operate across multiple domains in contested spaces against a near-peer adversary are required. Independent maneuver enables quicker adaptation by units operating in a constantly evolving DUT. Cross-domain fires integrates and delivers lethal and nonlethal fires across all domains, the EMS, and the information environment effecting the physical, cognitive, and operational characteristics present within DUT. Finally, each combatant in urban operations exerts constant physical and psychological pressure on its adversary. The Army requires human dimension research that enables mitigation of these impacts on friendly forces while increasing, particularly, the psychological impact of urban operations on the enemy.

(3) Convergence. The advantages of convergence, creation of cross-domain synergy and the layering of options, apply equally in DUT. Implementation of convergence, however, may be challenged by complex and congested physical and virtual environments and potential restrictions of rules of engagement. There may be increased use of nonlethal effects, and not all lethal effects may be useable.

D-4. Conclusion
Urban environments are inherently multi-domain. The interconnectedness of urban areas enables the flow of information, people, and commodities that make this environment disproportionately influential to all human affairs, including armed conflict. Dense urban terrain compresses physical and temporal spaces, compounds obstacles, and demands the simultaneous execution of multiple tasks. This means that while operations are slowed, the pace and complexity of tactical engagements increases. Employing the components of MDO in conjunction with improvements in Army capacity and capability to understand, organize, and train to operate in DUT enables successful operations.

Appendix E
Linkage to other concepts

E-1. This concept has linkages to the following concepts: Capstone Concept for Joint Operations, A Cooperative Strategy for 21st Century Seapower, Marine Corps Operating Concept: How an Expeditionary Force Operates in the 21st Century, Air Superiority 2030 Flight Plan, Air Force Future Operating Concept, Joint Concept for Integrated Campaigning (JCIC), Joint Operational Access Concept (JOAC), Joint Concept for Access and Maneuver in the Global Commons (JAM-GC), Joint Concept for Entry Operations (JCEO), Joint Concept for Human Aspects of Military Operations (JC-HAMO), and Joint Concept for Rapid Aggregation.

E-2. The Capstone Concept for Joint Operations establishes globally integrated operations as the future joint operational concept designed to address the challenge of meeting unremitting strategic requirements with constrained military resources. This concept describes how the Joint Force, and particularly ground forces, will overcome current challenges for rapid aggregation of globally distributed forces to conduct globally integrated operations.

E-3. A Cooperative Strategy for 21st Century Seapower states that naval forces perform these essential functions: all-domain access, deterrence, sea control, power projection, and maritime security. The *U.S. Army Multi-Domain Operations* concept proposes joint approaches that help address these essential functions.

E-4. The Marine Corps Operating Concept: How an Expeditionary Force Operates in the 21st Century focuses on five key drivers of change: complex terrain, technology proliferation, information as a weapon, battle of signatures, and increasingly contested maritime domain. The *U.S. Army Multi-Domain Operations* concept proposes joint approaches that help address these changes.

E-5. Air Superiority 2030 Flight Plan states that developing and delivering air superiority for the highly contested environment in 2030 requires a multi-domain focus on capabilities and capacity.

E-6. The Air Force Future Operating Concept states that flexibility in operational agility manifests as integrated MDO. It further asserts that operationally agile forces will defeat future enemy threats by fighting in a highly coordinated manner under the principle of mission command, and that this approach must be developed within the framework of the joint and combined team.

E-7. The Joint Concept for Integrated Campaigning (JCIC) describes a complex operational environment in which the Joint Force continually campaigns within the competition continuum, which features some mixture of cooperation, competition below armed conflict, and armed conflict. Within this construct, the purpose of the Joint Force is to continually seek the maintenance and sustainment of strategic aims, while countering efforts of revisionist states to undermine U.S. interests. MDO offers the means for the Joint Force to more effectively campaign across the competition continuum.

E-8. The Joint Operational Access Concept (JOAC) identifies the problem of projecting military force into an operational area and sustaining it in the face of armed opposition by increasingly capable enemies and within contested domains. The JOAC proposes employing cross-domain synergy – the complementary vice merely additive employment of capabilities in different domains such that each enhances the effectiveness and compensates for the vulnerabilities of the others – to establish superiority in some combination of domains that will provide the freedom of action required by the mission. This concept shows how ground forces will help to obtain cross-domain synergy in support of the joint campaign.

E-9. The Joint Concept for Access and Maneuver in the Global Commons (JAM-GC) states that the future force must be distributable, resilient, and tailorable, with sufficient scale and capable of operations of ample duration. The JAM-GC's solution includes advanced integration of operations across multiple domains, both inside and outside the contested environment. This is consistent with many of the ideas in this paper. This concept expands JAM-GC's premises from the global commons to operational maneuver by combined arms formations on land, integrated with those in the air, maritime, cyberspace, and space domains.

E-10. The Joint Concept for Entry Operations (JCEO) focuses on the integration of force capabilities across domains in order to secure freedom of maneuver on foreign territory within an operational area. This concept complements and helps set conditions for the operational ideas in the JCEO.

E-11. The Joint Concept for Human Aspects of Military Operations (JC-HAMO) supports the *U.S. Army Multi-Domain Operations* concept's need to understand relevant actors' motivations and the underpinnings of their will. JC-HAMO acknowledges the centrality of human will in war and provides a framework that integrates with the commander's decision cycle, enabling the Joint Force to influence a range of relevant actors. The goal of this concept is to improve understanding and effectiveness for cognitive activities during the conduct of operations.

E-12. The Joint Concept for Rapid Aggregation seeks to improve the speed, effectiveness, and efficiency of Joint Force aggregation in support of globally integrated operations. It describes the idea of forming operationally coherent joint and combined forces by quickly combining forces and capabilities, internally and with mission partners, across domains, echelons, geographic boundaries, and organizational affiliations. MDO complements this with the idea of dynamically calibrating force posture.

Appendix F
Lessons learned from the fielded force

F-1. Lessons to inform the *U.S. Army Multi-Domain Operations* concept
The Army has begun a rigorous process of experimentation and analysis to further inform and refine the *U.S. Army in Multi-Domain Operations* concept. In 2017, the Chief of Staff of the Army (CSA) directed the design and testing of Multi-Domain Task Forces (MDTFs) as forward-stationed formations able to execute aspects of MDO. Designed to deliver long-range precision joint strike as well as integrate air and missile defense, electronic warfare, space, cyber, and information operations, the MDTF operates across all domains, the EMS, and the information environment in both competition and conflict to provide the Joint Force and coalition with new capabilities to enable the defeat adversaries' anti-access and area denial strategies. Given its capability to compete and provide and initial penetration, the MDTF, as a forerunner to other multi-domain formations now in development, is the essential first step to realizing an MDO-capable Army by 2028.

a. U.S. Army Pacific is building the first experimental MDTF and executing a multi-year joint and combined experimentation program to inform future MDTF design. This experiment combines 17th Field Artillery Brigade with an augmented headquarters element, a joint intelligence, cyberspace, electronic warfare, and space (ICEWS) component, and other tasked organized formations to provide realistic assessments of concepts and capabilities and gather warfighter feedback to inform both Army plans and concept development. Forward stationed MDTFs with capabilities in all domains, the EMS, and the information environment create new dilemmas for adversaries that strengthen deterrence by complicating potential enemy war plans. During conflict, MDTFs also enable successful combat operations through early attrition of the adversary's anti-access and area denial systems and supporting combat forces from the inside, thereby re-enabling joint and combined maneuver held at risk today. Over numerous experiments and exercises in 2018, the MDTF successfully linked systems and Services across all domains, the EMS, and the information environment in ways never previously accomplished. Joint and combined components demonstrated new ways to share surveillance and targeting capabilities in support of combined schemes of maneuver. Most significantly, the MDTF demonstrated methods of employing layered non-kinetic effects (EW, space, cyberspace, and information operations) that helped set the conditions for successful combined kinetic engagements against both maritime and airborne targets. U.S. Army Pacific's efforts have provided critical lessons for both the Army and the Joint Force and are enabling faster, and effective transitions of MDO from concept to fielded capabilities.

b. Joint Warfighter Assessment (JWA) is the Army's capstone multi-echelon live and constructive exercise intended to demonstrate and assess future force concepts and capabilities required for a more lethal, expeditionary, and agile force. JWA exercises establish the conditions to assess unit execution of the MDO concept, ensure integration and interoperability of joint and multinational partners, and integrate and assess future force concepts and capabilities. To achieve an MDO-capable Army by 2028, JWA exercises provide the Army with valuable opportunities to focus the approach to "operationalizing MDO." These exercises allow for multi-echelon participants to experiment with the conceptual component solutions and to mature enabling capabilities to solve the five key problems of the MDO fight against a peer

adversaries: how does the Joint Force compete, penetrate, disintegrate, exploit, and re-compete throughout the depth of the operational environment to fight, win, and survive. JWA 18-1 was the first, examining MDO ideas at Grafenwoehr, Germany, between 27 April and 10 May 2018.

F-2. Lessons learned – tenets of MDO

a. **Calibrated force posture**. To effectively compete against a near-peer adversary, the Joint Force requires forward deployed multi-domain formations that operate within the range of an adversary's long-range anti-access and area denial systems. As a component of the Joint Force, the Army presents a reasonable option to provide an enduring and resilient posture in areas contested by an adversary's actions in competition and armed conflict.

(1) Ideally, these formations would represent the Army component of a permanent or virtual CJTF that develops habitual training relationships. These Army formations, however, must also have the capability to execute independent maneuver and employ cross-domain fires based on the Joint Force Commander's intent in cases where command and control capabilities are severely degraded. Multi-domain formations would also employ movement and maneuver throughout the theater in the competition phase and conduct capabilities demonstrations in support of deterrence, influence operations, and military deception plans.

(2) Non-kinetic effects are increasingly important in setting the conditions for successful kinetic operations by creating a relative advantage, particularly when force ratios favor an adversary. Effects such as denial and disruption of enemy communications, surveillance, tracking, navigation capabilities, the introduction of false information into enemy networks, and influence operations will be increasingly important factors of successful kinetic engagements. These can only be provided by forward deployed forces operating within areas or regions contested by an adversary.

b. **Multi-domain formations**.

(1) Wargames and simulations indicate that ground forces are relatively survivable (compared to air and naval forces) operating deep within an adversary's anti-access and area denial threat zone, provided they employ a layered set of protective measures. These measures include dispersal; a robust mobility plan; strict emissions control until certain trigger criteria are met; camouflage, concealment, and deception (including electromagnetic deception); and mobile mission command. Multi-domain formations provide a decisive contribution to the Joint Force by immediately contesting enemy aggression and conducting the initial penetration of enemy long-range systems from inside the range of their anti-access and aerial denial systems.

(2) Training and evaluating Soldiers and leaders in executing MDO will require state of the art real-time wargame simulation capabilities that include other Service, interagency, and multinational partner capabilities.

c. **Convergence**. Convergence is achieved both through Service-centric and joint integration of capabilities in all domains, the EMS, and the information environment. Schemes for Service-

centric integration are well-advanced. The Joint Force, however, has important shortfalls in its capability to achieve Joint convergence. Some shortfalls are technical, others are conceptual.

(1) Technical shortfalls. Two of the most important technical shortfalls are the lack of a joint common operational picture (COP) and limitations in joint sensor-to-shooter loop functionality. The Joint Force requires a COP, or visualization and decision support tool, which allows commanders in any Service, at any echelon, in any mission area, and at any classification level to "down-select" the categories of information they need to make informed decisions. It should also include the technical means to get that information pushed to them from all supporting components. The joint and combined team also require the capability for any joint sensor to publish surveillance and targeting data so it is available to any joint shooter, kinetic or non-kinetic. Army multi-domain formations must have the capability, for example, to receive targeting data and clearance of fires from joint platforms such as the F-35, Aegis, or from other Theater or National Technical Means. The Army and the other Services have many programs and initiatives underway that can help close these shortfalls.

(2) Conceptual shortfalls.

(a) Mission command. The Army must continue to build trusted teams of professionals that thrive in ambiguity and chaos and who are empowered through a doctrine of mission command to rapidly react to threats and opportunities based on a commander's intent. The MDO concept leverages a critical U.S. military advantage—our people. But the Army does not always design our training programs and exercises in ways that facilitate or require this type of decentralized decision making. More intellectual effort is required to improve training designs that facilitate mission command of MDO given the increased complexity.

(b) Authorities. Many of the most important non-kinetic capabilities across the Joint Force are compartmented, and only a small number of staff at the theater headquarters level are authorized access. Many of these same programs require authorization to employ a capability at the Secretarial level or higher and/or authorization from a functional combatant command. The Joint Force needs to put in place and exercise processes to rapidly obtain approval to employ these capabilities in support of tactical operations (i.e., below Corps, Fighter Wing, Carrier Strike Group, and Marine Expeditionary Force). This is particularly critical when force ratios favor an adversary.

(c) Munitions optimization planning. Limited inventories of munitions across the Joint Force could create critical shortfalls that lead to defeat in combat. Therefore, when multiple joint fires systems are in kinetic range of the same adversary threats, munitions plans that optimize and sequence fires can help husband limited resources while achieving desired effects. An integrated munitions optimization plan is required in addition to de-confliction mechanisms.

F-3. Lessons learned – materiel modernization
While DoD once dominated virtually all technological development related to combat operations, today the commercial sector is producing many combat enabling technologies faster than DoD. In some areas, DoD acquisition processes almost guarantee the obsolescence of equipment by the time it is fielded. Ongoing acquisition reforms efforts recommend the Army

consider selective fielding of new capabilities that are Acquisition Category II or III and adopt the "Buy, Try, Decide" model pioneered by U.S. Special Operations Command. This will help ensure Army formations remain equipped with state of the art capabilities to meet their mission requirements and will allow the Army to better assess what emerging capabilities should become new Army programs of record or which might inform change proposals to current programs of record.

Appendix G
References

Section I
Required References. Army regulations, Department of the Army pamphlets, field manuals (FMs), Army doctrine publications, Army doctrine reference publications (ADRP), and Department of the Army forms are available at Army Publishing Directorate home page http://www.usapa.army.mil TRADOC publications and forms are available at TRADOC Administrative Publications home page at http://adminpubs.tradoc.army.mil. Joint publications (JPs) are available on the Joint Electronic Library at http://www.dtic.mil/doctrine/new_pubs/jointpub_operations.htm or https://jdeis.js.mil/jdeis/index.jsp?pindex=0

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Glossary

Section I
Abbreviations

ADRP	Army doctrine reference publication
APS	Army prepositioned stocks
DoD	Department of Defense
DUT	dense urban terrain
EMS	electromagnetic spectrum
EW	electronic warfare
FM	field manual
HUMINT	human intelligence
IADS	integrated air defense system
IEO	information environment operations
IRC	information-related capability
ISR	intelligence, surveillance, and reconnaissance
JAM-GC	Joint Concept for Access and Maneuver in the Global Commons
JCEO	Joint Concept for Entry Operations
JCIC	Joint Concept for Integrated Campaigning
JOAC	Joint Operational Access Concept
JP	joint publication
LRPF	long-range precision fires
MDO	Multi-Domain Operations
MDTF	Multi-Domain Task Force
MRL	multiple rocket launcher
NATO	North Atlantic Treaty Organization
SOF	special operations forces
SAM	surface-to-air missile
SRBM	short-range ballistic missile
TEC	theater enabling command
TRADOC	U.S. Army Training and Doctrine Command
UAS	unmanned aircraft system
U.S.	United States

Section II
Terms

adversary
A party acknowledged as potentially hostile to a friendly party and against which the use of force may be envisaged. (JP 3-0)

air domain
The atmosphere, beginning at the Earth's surface, extending to the altitude where its effects upon operations become negligible. (JP 3-30)

armed conflict
When the use of violence is the primary means by which an actor seeks to satisfy its interests. (JCIC)

battlefield*
The area where military operations are conducted to achieve military goals consisting of all domains (air, land, maritime, space, and cyberspace), the electromagnetic spectrum, and the information environment (including human cognitive aspects). It includes factors and conditions that must be understood to successfully apply combat power, protect the force, or complete the mission including enemy and friendly armed forces, infrastructure, weather, and terrain within the operational areas and areas of interest.

calibrated force posture*
The combination of position and the ability to maneuver across strategic distances. It includes, but is not limited, to basing and facilities, formations and equipment readiness, the distribution of capabilities across components, strategic transport availability, interoperability, access, and authorities.

campaign
A series of related major operations aimed at achieving strategic and operational objectives within a given time and space. (JP 5-0)

Close Area*
Where friendly and enemy formations, forces, and systems are in imminent physical contact and contest for control of physical space in support of campaign objectives.

competition
The condition when two or more actors in the international system have incompatible interests but neither seeks to escalate to open conflict in pursuit of those interests. While violence is not the adversary's primary instrument in competition, challenges may include a range of violent instruments including conventional forces with uncertain attribution to the state sponsor. (JCIC)

contested spaces*
Those areas where U.S., allied, or coalition forces can challenge the adversary's denial measures, maintain some degree of friendly freedom of action, and potentially deny adversary freedom of action.

convergence*
Rapid and continuous integration of capabilities in all domains, the electromagnetic spectrum, and information environment that optimizes effects to overmatch the enemy through cross-domain synergy and multiple forms of attack all enabled by mission command and disciplined initiative.

counterinsurgency
Comprehensive civilian and military efforts designed to simultaneously defeat and contain insurgency and address its root causes. (JP 3-34)

cross-domain*
Having an effect from one domain into another.

cross-domain fires*
The integration and delivery of lethal and nonlethal fires across all five domains (land, maritime, air, space and cyberspace), the electromagnetic spectrum, and the information environment.

cross-domain maneuver
The employment of mutually supporting lethal and nonlethal capabilities of multiple domains to create conditions designed to generate overmatch, present multiple dilemmas to the enemy, and enable Joint Force freedom of movement and action. (TRADOC Pamphlet 525-3-6)

cross-domain synergy
The complementary vice merely additive employment of capabilities in different domains such that each enhances the effectiveness and compensates for the vulnerabilities of the others – to establish superiority in some combination of domains that will provide the freedom of action required by the mission. (Capstone Concept for Joint Operations, JOAC)

cyberspace
A global domain within the information environment consisting of the interdependent networks of information technology infrastructures and resident data, including the Internet, telecommunications networks, computer systems, and embedded processors and controllers. (JP 3-12)

cycle time*
The shortest overall time required to complete one full linkage of preparation, planning and execution, duration, and reset of a capability.

decisive operation
The operation that directly accomplishes the mission. (ADRP 3-0)

decisive space*
Conceptual geographic and temporal location where the full optimization of the employment of cross-domain capabilities generates a marked advantage over an enemy and greatly influences the outcome of an operation.

Deep Fires Areas*
The areas beyond the feasible range of movement for conventional forces but where joint fires, SOF, information, and virtual capabilities can be employed.

Deep Maneuver Area*
The area where maneuver forces can go (beyond the Close Area) but is so contested that maneuver still requires significant allocation and convergence of multi-domain capabilities.

destroy
Tactical mission task that physically renders an enemy force combat ineffective until it is reconstituted. Alternatively, to destroy a combat system is to damage it so badly that it cannot

perform any function or be restored to a usable condition without being entirely rebuilt. (FM 3-90-1)

denied spaces*
Those areas where the adversary can severely constrain U.S. and allied forces' freedom of action through anti-access and area denial and other measures.

dense urban terrain*
Areas characterized by extraordinarily closely-packed manmade infrastructure and high population density, potentially including concentrations of high-rise buildings, subterranean features, and densely packed slums.

dis-integrate*
Break the coherence of the enemy's system by destroying or disrupting its subcomponents (such as command and control means, intelligence collection, critical nodes, etc.) degrading its ability to conduct operations while leading to a rapid collapse of the enemy's capabilities or will to fight.

dislocate*
Render the enemy's strength irrelevant (and ill positioned) by achieving positional advantage through movement, removing the enemy from the decisive point, or achieving functional advantage through technology or tactics. (proposed change to existing doctrinal term)

domain*
An area of activity within the operational environment (land, air, maritime, space, and cyberspace) in which operations are organized and conducted. (modified joint definition)

echeloning or **echelonment***
Maneuver of forces from the Strategic and Operational Support Areas into the Tactical Support Area and Close Area.

electromagnetic spectrum
The range of frequencies of electromagnetic radiation from zero to infinity. It is divided into 26 alphabetically designated bands. (JP 3-13.1)

enemy
A party identified as hostile against which the use of force is authorized. (ADRP 3-0)

engagement*
The combination of physical, informational, and psychological actions taken to build relationships or influence actors' decision-making (moral and mental).

escalation advantage*
The ability to change the correlation of forces in your favor faster than an adversary.

expeditionary maneuver*
The rapid deployment of task-organized combined arms forces able to transition quickly to conduct operations of sufficient scale and ample duration to achieve strategic objectives.

fix
A tactical mission task where a commander prevents the enemy from moving any part of his force from a specific location for a specific period. Fix is also an obstacle effect that focuses fire planning and obstacle effort to slow an attacker's movement within a specified area, normally an engagement area. (FM 3-90-1)

globally integrated operations
Operations arranged as cohesive military actions in time, space, and purpose, executed as a whole to address transregional, all domain, and multi-functional challenges. (Capstone Concept for Joint Operations (draft-2018))

hyperactive*
More active than usual or desirable; hyper-competitive during competition and hyper-violent in armed conflict.

independent maneuver*
Operating dispersed for an extended period without continuous [or contiguous] support from higher echelons while retaining the ability to concentrate combat power rapidly at decisive spaces by employing cross-domain fires and maneuver to achieve mission objectives within the intent of the theater campaign.

information space*
The complex system of interrelated and networked information flows amongst and between populations that a commander must understand and consider to gain and maintain freedom of action.

information environment
The aggregate of individuals, organizations, and systems that collect, process, disseminate, or act on information. (JP 3-13)

information environment operations*
Integrated employment of information related capabilities (IRC) in concert with other lines of operation to influence, deceive, disrupt, corrupt, or usurp the decision making of enemies and adversaries while protecting our own; to influence enemy formations and populations to reduce their will to fight; and influence friendly and neutral populations to enable friendly operations.

information operations
Integrated employment, during military operations, of information related capabilities (IRC) in concert with other lines of operation to influence, deceive, disrupt, corrupt, or usurp the decision making of enemies and adversaries while protecting our own. (JP 3-13)

information warfare
Employing information capabilities in a deliberate disinformation campaign supported by actions of the intelligence organizations designed to confuse the enemy and achieve strategic objectives at minimal cost.[55]

interoperability
The ability to operate in synergy in the execution of assigned tasks. (JP 3-0) 2. The condition achieved among communications-electronics systems or items of communications-electronics equipment when information or services can be exchanged directly and satisfactorily between them and/or their users. (JP 6-0)

intelligence, surveillance, and reconnaissance
An integrated operations and intelligence activity that synchronizes and integrates the planning and operation of sensors, assets, and processing, exploitation, and dissemination systems in direct support of current and future operations. Also called ISR. (JP 2-01)

irregular warfare
A violent struggle among state and non-state actors for legitimacy and influence over the relevant population(s). Also called IW. (JP 1) [Note: Irregular warfare favors indirect and asymmetric approaches, though it may employ the full range of military and other capacities, to erode an adversary's power, influence, and will.]

isolate
A tactical mission task that requires a unit to seal off—both physically and psychologically— an enemy from sources of support, deny the enemy freedom of movement, and prevent the isolated enemy force from having contact with other enemy forces. (FM 3-90-1)

land domain
The area of the Earth's surface ending at the high water mark and overlapping with the maritime domain in the landward segment of the littorals. (JP 3-31)

littoral
The littoral comprises two segments of the operational environment: 1. Seaward: the area from the open ocean to the shore, which must be controlled to support operations ashore. 2. Landward: the area inland from the shore that can be supported and defended directly from the sea. (JP 2-01.3)

maritime domain
The oceans, seas, bays, estuaries, islands, coastal areas, and the airspace above these, including the littorals. (JP 3-32)

multi-domain*
Dealing with more than one domain at the same time.

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[55] Derived from Russia Report I, pg 9. Adapts Soviet reflexive control to the contemporary geopolitical context. "Reflexive control" is defined as a means of conveying to a partner or an opponent specially prepared information to incline him to voluntarily make the predetermined decision desired by the initiator of the action.

multi-domain formations*
Army organizations possessing the combination of capacity, capability, and endurance necessary to operate across multiple domains in contested spaces against a near-peer adversary.

Multi-Domain Operations (MDO)*
Operations conducted across multiple domains and contested spaces to overcome an adversary's (or enemy's) strengths by presenting them with several operational and/or tactical dilemmas through the combined application of calibrated force posture; employment of multi-domain formations; and convergence of capabilities across domains, environments, and functions in time and spaces to achieve operational and tactical objectives.

near-peer adversaries*
Those nation states with the intent, capabilities, and capacity to contest U.S. interests globally in most or all domains, the EMS, and the information environment.

neutralize
A tactical mission task that results in rendering enemy personnel or materiel incapable of interfering with a particular operation. (FM 3-90-1)

operational maneuver*
Maneuver that supports operational level objectives; usually occurs within a theater of operations (intratheater)

operational preparation of the environment
The conduct of activities in likely or potential areas of operations to prepare and shape the operational environment. (JP 3-05)

Operational Support Area*
The area of responsibility from which most of the air and maritime capabilities derive their source of power, control, and sustainment as well as where ground forces enter theater, organize, and prepare for rapid onward movement and integration.

overmatch*
The application of capabilities or unique tactics either directly or indirectly, with the intent to prevent or mitigate opposing forces from using their current or projected equipment or tactics.

planning and execution time*
The time required to plan employment and then execute it to create an effect, to include creating a window of advantage. Typically, planning and preparation occur simultaneously though depending on the situation and capability one or the other might be the limiting factor.

position of relative advantage
A location or the establishment of a favorable condition within the area of operations that provides the commander with temporary freedom of action to enhance combat power over an

enemy or influence the enemy to accept risk and move to a position of disadvantage. (ADRP 3-0)

precision logistics*
The art of delivering support forward utilizing a combination of sensor-driven predictive analysis, condition-based maintenance at the point of need, and robotic autonomous delivery combined with the beneficial results of demand reduction to enable multi-domain formations to present a credible deterrence during competition, to transition to armed conflict with speed and agility, and to execute Multi-Domain Operations in depth, including resupply of formations conducting independent maneuver to extend time and reach of protracted operations.

preparation time*
The time required to organize and maneuver forces or capabilities (e.g. a cyber weapon) from its current location to the intended employment space or window of advantage.

reset
A set of actions to restore equipment to a desired level of combat capability commensurate with a unit's future mission. (JP 4-0)

resilience*
The ability for Army formations and systems at all echelons to operate in contested spaces against a capable adversary

shaping operation
An operation that establishes conditions for the decisive operation through effects on the enemy, other actors, and the terrain. (ADRP 3-0)

snap drill*
Rapid reaction military exercise to test combat readiness.

space domain
The area above the altitude where atmospheric effects on airborne objects become negligible. (JP 3-14)

stand-off*
The physical, cognitive, and informational separation that enables freedom of action in any, some, or all domains, the electromagnetic spectrum, and information environment to achieve strategic and/or operational objectives before an adversary can adequately respond. It is achieved with both political and military capabilities.

strategic maneuver*
Maneuver that supports strategic level objectives; usually occurs across more than one theater of operations (intertheater)

Strategic Support Area*
The area of cross-combatant command coordination, strategic sea and air lines of communications, and the homeland.

system
A group of interacting, interrelated, and interdependent components or subsytems that form a complex and unified whole. Systems have a purpose with their parts arranged in a way (structure) to carry out their purpose. (TRADOC Pamphlet 525-3-3)

Tactical Support Area*
The area that directly enables decisive tactical operations in the Close Area and extension of capabilities into the Deep Maneuver and Deep Fires Areas.

unconventional warfare
Activities conducted to enable a resistance movement or insurgency to coerce, disrupt, or overthrow a government or occupying power by operating through or with an underground, auxiliary, and guerrilla force in a denied area. Also called UW. (JP 3-05.1)

window of superiority*
Converging capabilities in time and space in selected domains and environments to enable commanders to gain localized control or physical, virtual, and/or cognitive influence over a specified area to prevent its use by an enemy or to create conditions necessary for successful friendly operations.

* Proposed definition.

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