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## Foreword

### *From the Director United States Army Capabilities Integration Center*

The U.S. Army is the Nation's principal land force organized, trained, and equipped for prompt and sustained combat on land. Today's adversaries have studied how the U.S. Joint Force prefers to operate and adapted to develop capabilities that contest our operations on land, at sea, in the air, in space and cyberspace, as well as the electromagnetic spectrum. Enemies and adversaries operate beyond the physical battleground on battlegrounds of information, perception, political subversion, and criminality. Defeating future enemies that possess advanced capabilities calls for land forces operating as part of integrated joint teams that conduct simultaneous and sequential operations across multiple domains and on multiple battlegrounds and contested spaces. Army forces must be prepared to operate consistent with the concept of multi-domain battle, fighting and winning across all contested spaces creating temporary windows of superiority across multiple domains.

TRADOC Pamphlet 525-3-5, *The U.S. Army Functional Concept for Maneuver Support (AFC-MS)*, describes maneuver support required capabilities to conduct joint combined arms operations and multi-domain battle as described in TRADOC Pamphlet 525-3-1, *The U.S. Army Operating Concept: Win in a Complex World* and the *Multi-Domain Battle: Combined Arms for the 21<sup>st</sup> Century* white paper. Complementary and reinforcing maneuver support forces shape terrain, enable expeditionary maneuver, establish base camps, mitigate obstacles and hazards, and protect the force, populations, and resources. Maneuver support forces include engineering, military police, explosive ordnance disposal, and chemical, biological, radiological, and nuclear units. Maneuver support capabilities, however, are not limited to specific branches and include a broad range of capabilities necessary to fight, preserve freedom of action, consolidate gains, and win in armed conflict.

The proliferation of weapons of mass destruction is one of the most dangerous trends that effect future conflict. Weapons of mass destruction capabilities and technologies will increase risk to missions, forces, and civilian populations at home and abroad. Army forces must minimize vulnerabilities associated with chemical, biological, radiological, nuclear, and high yield explosive hazards, and mitigate adversary capabilities to deploy or employ these weapons against the U.S. and mission partners during joint combined arms operations. Maneuver support forces provide the expertise and capabilities necessary to protect the force and accomplish the mission.

The need to operate in dense urban areas will complicate future maneuver support efforts. Maneuver support capabilities and units must be able to ensure mobility while restricting enemy freedom of movement and action across all domains and in complex terrain. Maneuver support capabilities must present the enemy with multiple dilemmas while protecting friendly forces and non-combatants.

This concept serves as a foundation for developing future maneuver support required capabilities and is fundamental to Army leaders ability to *think* clearly about future armed conflict, *learn* about the future through the Army's campaign of learning, *analyze* future capability gaps, identify opportunities, and *implement* interim solutions to improve current and future force combat effectiveness.

A handwritten signature in black ink, appearing to read 'H. R. McMaster', with a long horizontal flourish extending to the right.

H. R. McMASTER  
Lieutenant General, U.S. Army  
Director, Army Capabilities  
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## Preface

*From the Commanding General  
United States Army Maneuver Support Center of Excellence*

TRADOC Pamphlet (TP) 525-3-5, the *U.S. Army Functional Concept for Maneuver Support* (AFC-MS) defines maneuver support forces, describes the future environment and threat, and discusses how maneuver support capabilities support joint combined arms operations across Army doctrine, organization, training, materiel, leadership and education, personnel, and facilities activities

The AFC-MS captures tasks and systems (formerly found under the protection warfighting function and protection functional concept) in the concept and in the maneuver support warfighting function. This concept focuses on capabilities that support the Army's core competency of maneuver and includes all maneuver support capabilities.

Maneuver support is defined as the related tasks and systems to understand and shape the environment, mitigate the effects of obstacles and hazards, and protect the force, populations, resources, and activities to enable joint combined arms operations. Maneuver support forces are elements that execute maneuver support functions defined in this concept across the range of military operations.

Maneuver support forces, as defined in this concept, provide supported commanders with options, integrate efforts with multiple partners, operate across multiple domains, and present enemies and adversaries with multiple dilemmas. Maneuver support forces are agile, expert, and versatile and provide the right mix of capabilities with technical capabilities and information to enable commanders with freedom of action and contribute to mission success in any operation.



KENT D. SAVRE  
Major General, USA  
Commanding

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TRADOC Pamphlet 525-3-5

24 February 2017

Military Operations

THE U.S. ARMY FUNCTIONAL CONCEPT FOR MANEUVER SUPPORT

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FOR THE COMMANDER:

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**History.** This publication is a revision of United States Army Training and Doctrine Command (TRADOC) Pamphlet 525-3-5 developed as part of the Army concept framework for future Army forces. This publication is revised extensively, so not all changed portions have been highlighted in the summary of change.

**Summary.** TRADOC Pamphlet 525-3-5 describes how maneuver support forces as part of Army forces and joint, interorganizational, and multinational efforts, provide specialized capabilities that enable mobility, countermobility, and protection to accomplish campaign objectives and protect U.S. national interests. This concept guides future force development and modernization efforts by establishing the conceptual foundation for required capabilities to enable freedom of action across the range of military operations in an uncertain and complex environment.

**Applicability.** This concept applies to all Department of the Army (DA) activities that develop doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) capabilities. This concept guides future force development and informs the Joint Capabilities Integration and Development System process. It also supports the Army capabilities development processes described in TRADOC Regulation 71-20 and functions as a conceptual basis for developing subordinate concepts related to the future force within DOTMLPF.

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\*This pamphlet supersedes TRADOC Pamphlet 525-3-5, dated 13 October 2010.

**Proponent and Exception Authority.** The proponent of this pamphlet is the Director, Army Capabilities Integration Center, Concept Development and Learning Directorate, TRADOC Army Capabilities Integration Center (ARCIC) (ATFC-ED), 950 Jefferson Avenue, Fort Eustis, Virginia 23604-5763.

**Suggested improvements.** Users are invited to submit comments and suggested improvements via The Army Suggestion Program online at <https://armysuggestions.army.mil> (Army Knowledge Online account required) or via DA Form 2028 to Director, TRADOC ARCIC (ATFC-ED), 950 Jefferson Avenue, Fort Eustis, Virginia 23604-5763. Suggested improvements may also be submitted using DA Form 1045.

**Availability.** This pamphlet is available on the TRADOC homepage at <http://www.tradoc.army.mil/tpubs/regndx.htm>

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## Summary of Change

TRADOC Pamphlet 525-5-3

The U.S. Army Functional Concept for Maneuver Support

- o This revision, dated 24 February 2017-
- o Considers both United States Army Training and Doctrine Command Pamphlet 525-3-6 and the multi-domain battle concept (throughout).
- o Recognizes protection as a continuing activity within the operations process and describes maneuver support contributions for protection (throughout)
- o Recommends changing the functional concept and warfighting function title from maneuver support and protection to maneuver support (para 1-4a).
- o Describes the maneuver support warfighting function (para 1-4a, b, and c).
- o Updates maneuver support assumptions and required capabilities (para 1-5 and app B).
- o Emphasizes the need for complementary and reinforcing mobility, countermobility, and protection capabilities to enable freedom of action during joint combined arms operations (para 1-6d and chap 3).
- o Expands on United States Army Training and Doctrine Command Pamphlets 525-3-0, 525-3-1, and 525-3-6 ideas (chap 3).
- o Describes the maneuver support contributions role for homeland defense and defense support of civil authorities (para 3-5e and f).

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## **Chapter 1**

### **Introduction**

#### **1-1. Purpose**

United States (U.S.) Army Training and Doctrine Command (TRADOC) Pamphlet (TP) 525-3-5, *The U.S. Army Functional Concept for Maneuver Support* (AFC-MS) describes how maneuver support forces provide reinforcing and complementary capabilities to support the future force. The concept identifies the capabilities required to deter conflict, protect national interests, and enable freedom of movement and action when conducting joint combined arms operations. The Army develops agile, bold, and innovative maneuver support Soldiers to lead and support joint combined arms formations capable of deploying and conducting operations in complex multi-domain environments as members of a joint, interorganizational, and multinational team across the range of military operations (ROMO). The maneuver support concept builds on the ideas presented in TP 525-3-0, *The U.S. Army Capstone Concept* (ACC), and TP 525-3-1, *The U.S. Army Operating Concept: Win in a Complex World* (AOC), TP 525-3-6 *The U.S. Army Functional Concept for Movement and Maneuver* (AFC-MM), *Multi-Domain Battle, Combined Arms for the 21<sup>st</sup> Century* (draft,) and describes how future maneuver support forces conduct and support joint and cross-domain operations as an essential member of the Joint Force.

#### **1-2. References**

Appendix A lists required and related publications.

#### **1-3. Explanation of abbreviations and terms**

The glossary explains abbreviations and special terms used in this pamphlet.

#### **1-4. Background**

a. The AOC defines the maneuver support and protection warfighting function as, the related tasks and systems that enhance movement and maneuver, and preserve the force and partners. However, analysis and concept maturity have exposed shortcomings in both the definition and the title. First, the definition lacks clarity and specificity needed to describe actual maneuver support forces tasks, units, and organizations under the aegis of this warfighting function. Second, having protection as part of the warfighting function complicates the definition, as protection is a continuing activity within the operations process; all Army warfighting functions and Army functional concepts describe protection tasks specific to their needs. Thus, protection does not need its own warfighting function. Therefore, this concept retitles the maneuver support warfighting function by removing protection, and redefining the function as, the related tasks and systems that understand and shape the environment, mitigate the effects of obstacles and hazards, and protect the force, populations, resources, and activities to enable freedom of movement and action.

b. The framework for maneuver support forces includes: understand, shape, mitigate and protect:

(1) The terms, understand and shape the environment, describe actions that effect all domains (land, air, maritime, space, and cyberspace). Maneuver support forces understand the environment

by employing maneuver support technical information capabilities and leveraging the intelligence enterprise. Maneuver support capabilities support shaping perceptions and influencing the behavior of the local populous, the enemy and other actors within the operational environment; developing partner nation and friendly military capabilities for self-defense and multinational operations; improving situational understanding; and support activities to build relationships and or partner capacity that enable peacetime and contingency access for U.S. forces worldwide. This definition includes the physical alteration of the terrain, which entails coordinating effects across all domains, construction, repair, and decontamination; road, base camps, and physical structure maintenance; and emplacing cross-domain obstacles and barriers.

(2) Mitigating obstacles and hazards. Maneuver support forces mitigate obstacles effects designed or employed to impede freedom of movement. Hazards refer to chemical, biological, radiological, nuclear (CBRN), explosive material, and other forms of explosive hazards.

(3) Throughout this document, protection as defined in Army Doctrine Reference Publication (ADRP) 1-02 and ADRP 3-37, applies. Protection is a continuing activity and a responsibility of commanders at all echelons; maneuver support forces provide enhanced technical protection capabilities that compliment and re-enforce existing protection capabilities.

(4) Activities refer to missions conducted to support military engagement, security cooperation, deterrence, crisis response, and contingency operations.<sup>1</sup> They occur outside an official joint task force or offensive and/or defensive operations. Activities include but are not limited to security force assistance, foreign internal defense, defense support of civil authorities (DSCA), and homeland defense.

c. The proposed definition includes tasks and systems associated with creating favorable conditions for commanders to gain and maintain operational advantage. These tasks include mobility; countermobility; survivability; general engineering; geospatial engineering; contingency basing; detention; policing; security and mobility support; investigations; weapons of mass destruction (WMD) proliferation prevention; WMD counter-proliferation; CBRN defense; CBRN consequence management; and counter explosive hazards operations.

## **1-5. Assumptions**

a. The assumptions from the ACC and the AOC apply equally to this pamphlet. AFC-MS assumptions expand and support those in both the ACC and AOC.

b. The following assumptions about the future underpin the AFC-MS.

(1) Engineer, CBRN, military police, and enablers such as explosive ordnance disposal detachments, will remain the primary maneuver support forces to support Army formations conducting joint combined arms operations across the ROMO.

(2) The maneuver support multifunctional brigade will remain a terrain-owning tactical headquarters.

- (3) Cross-domain maneuver will be a supporting activity under multi-domain battle.<sup>2</sup>
- (4) WMDs pose an increased threat to national and international security.
- (5) Threats to the homeland will increase significantly, especially when the U.S. is engaged in contingency operations abroad.
- (6) U.S. Army maneuver support forces will become increasingly vulnerable over time as threat anti-tank, anti-personnel, and anti-air munitions continue to exceed protection.
- (7) Future threats, with advanced technology, will degrade U.S. communications, surveillance, precision fires, and position, navigation, and timing, challenging U.S. forces across the breadth and depth of the battlefield.
- (8) Peer threats will exploit multi-domain anti-access and area denial (AD) capabilities with extended ranges, integrated precise near-real time information collection, enabled by space and cyber-electromagnetic activities, air defense, and fires, challenging U.S. power projection, entry and freedom of action in all domains.
- (9) By 2030 the Army will overcome interoperability, equipment, and materiel readiness issues between compos and joint elements.
- (10) Forensics systems will mature, but will not be developed fully or fielded to the force during 2020-2040.
- (11) Enemy long range target acquisition and fires capabilities will increase support area vulnerability.

#### **1-6. Linkage to the Army Concept Framework (ACF)**

- a. The ACC, AOC, Army functional concepts, and Army senior leader-directed concepts and studies comprise the ACF. The framework provides the intellectual and foundational underpinnings for institutional adaptations and investments necessary to enhance the Army's ability to conduct operations. The ACF also provides the conceptual basis for experimentation, wargaming, and doctrine, organization, training, materiel, leader development and education, personnel, and facilities capabilities that guides future force training and development.
- b. The ACC describes the anticipated future operational environment, what the future Army must do based on that environment, and the broad capabilities the Army requires to accomplish its enduring missions successfully. The ACC describes the characteristics of the future Army and establishes the foundation for subordinate concepts to describe how the future Army must fight.
- c. The AOC guides functional concept development. The AOC discusses how the complimentary and reinforcing capabilities within warfighting functions, when combined with leadership and information, generate combat power to accomplish future joint combined arms operations.

d. The AFC-MS describes how Army forces conduct, integrate and support security operations and cross-domain maneuver to enable forces to understand and shape the environment and control terrain; defeat enemy forces, and protect populations, infrastructures and activities to enable joint force freedom of movement and action in the 2020 to 2040 operating environment. The concept provides a vision of how future maneuver support forces develop situational understanding continuously, gain positions of relative advantage, and consolidate gains to achieve commander's intent and accomplish the mission.

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## **Chapter 2**

### **Maneuver Support Context**

#### **2-1. Introduction**

Anticipating maneuver support requirements in future armed conflict and homeland operations requires an understanding of the threat, the operational environment, and the significant challenges which pose threats to the Nation's security and vital interests.

#### **2-2. Operational context with implications to maneuver support forces**

a. The characteristics of the future operational environment, as discussed in the AOC, challenge maneuver support capabilities during future operations. These characteristics include increased velocity and momentum of human interaction and events; potential for overmatch; proliferation of WMD; spread of advanced cyberspace capabilities; offensive space control capabilities; and demographics and operations among populations, in cities, and complex terrain (to include the homeland).

b. Maneuver support leaders understand the operational environment and its challenges to provide support to Army and joint forces, operate among populations, and build capacity and trust (through enduring relationships) with joint, interorganizational, and multinational partners, and local populations to deliver and integrate capabilities across the ROMO.

#### **2-3. Threats and challenges in the future operational environment**

a. The operational environment.

(1) Land-based threats emanate from capable, hostile nation state fielded forces, and from areas where state weakness allows non-state actors or adversary organizations to operate. Adversary's may employ traditional, unconventional, and hybrid strategies to threaten U.S. security and vital interests. Threats may emerge from nation states or non-state actors, such as transnational terrorist organizations, insurgents, and criminal threats. Enemies will continue to apply simple, advanced, and dual-use technologies, such as improvised explosive devices. Enemies avoid U.S. strengths, such as long-range surveillance and precision strike, through traditional countermeasures such as, dispersion and intermingling with civilian populations.

(2) To accomplish political objectives, enemy organizations expand operations from physical battlegrounds to other contested spaces, such as public perception and cyberspace. As the Army moves towards 2040, future challenges are too numerous and complex to be addressed solely by the U.S. military. A significant portion of national efforts must include building foreign partnerships and helping partners with their internal challenges.

b. Threats.

(1) Near-peer threats. Russia will continue to develop as a regional power by pursuing a strategy that seeks to regain territory lost at the end of the Cold War. Russian annexation of the Crimean Peninsula and the use of conventional and unconventional land forces in Ukraine suggest that Russia is determined to expand its territory and assert its power on the Eurasian landmass. The existence of significant Russian-speaking populations in "near abroad" regions which once belonged to the Soviet Union enable this strategy and capitalize on strong ethnic, historical, cultural, and economic ties to Russia. Using information warfare tactics, (such as propaganda, disinformation, and cyber operations), Russia seeks to meet goals using all facets of the state. China will form regional alliances, particularly with Russia, by continuing to build relations with countries in the region, emphasizing the importance of win-win cooperation and mutual respect. As its economy and military power grow, China will gain leverage through its ability to offer funding, grants, technology, and infrastructure aid to surrounding countries and beyond.

(2) Regional threats. Iran continues to develop as an influential regional power by establishing a strategic belt of politically aligned buffer states from the Persian Gulf to the Mediterranean via Iraq to Syria. Through economic and military aid to the Syrian government, Iran ensures the continuation of Assad's Shi'ite regime; thus, ensuring Iran's ability to exert influence in Lebanon and Jordan through Syria. A highly militarized society, North Korea maintains a complex defensive posture characterized by hardened battle positions and the ability to mobilize rapidly during regional instability. Attacks on South Korean naval vessels, artillery strikes on disputed islands, and cross border special operations incursions remain viable options.

(3) Radical ideologue. Radical ideologues, which include terrorist groups, remain a dangerous part of any future strategic operational environment. Though varied in size, capability, and intent, they employ violence to achieve their political objectives. Some of these groups benefit from covert state sponsorship, while others will be resolutely independent. The increasing speed and volume of human interaction will mask terrorist activities.

(4) Fragile state. A fragile state is where the central government is no longer capable of providing the goods, services, and security necessary for the functioning of an integrated civil society. Fragile states often include many ethnic groups and tribes, creating conflict between the population and the government. Many fragile states have a factionalized elite, significant ethnic or tribal fragmentation, suffer from human rights violations, and have a high degree of unresolved group grievances. Fragile state key characteristics include loss of governmental legitimacy; human security, including food, shelter, and protection from harm including extreme and uncontrolled violence; and a powerful internal security apparatus.

c. Traditional and unconventional threats.

(1) The enemy will exploit terrain, weather, and unconventional capabilities to obtain the tactical, operational, and strategic advantage to offset the U.S. technological and range advantages. Smaller units may assemble to form larger formations as opportunities arise to conduct specific operations. Operations will see a blending of traditional and unconventional, low and high technology, mass and momentum, and guerrilla-type operations. The enemy seeks to employ their own long range fires from cruise and ballistic missiles, cannon and rocket artillery, fixed and rotary wing aircraft, and unmanned aerial systems against massed formations or fixed targets.

(2) The enemy will use CBRN hazards, toxic chemicals, and industrial materials to their advantage. The enemy will attempt attacks on the homeland, friendly ports of embarkation and debarkation, intermediate staging bases, and key deployment nodes and lines of communications. The enemy will employ improvised explosive devices to disrupt operations and attack friendly forces and their activities, populations, and infrastructure. Opponents will try to counter U.S. strengths by attacking or exploiting weaknesses, specifically our dependence on communications, computers, intelligence, surveillance, and reconnaissance systems.

(3) Cyber threats to U.S. national and economic security will increase in frequency, scale, sophistication, and impact severity. The range of cyber threat actors, methods of attack, targeted systems, and victims is expanding. Information and communication technology networks that support the U.S. government, military, commercial, and social activities remain vulnerable to espionage and disruption. Non-state entities, including transnational criminal organizations and terrorists, continue to employ human, technical, and cyber intelligence capabilities presenting a significant counterintelligence challenge. These non-state entities recruit sources and perform physical and technical surveillance to facilitate illegal activities and avoid detection and capture.

d. Urban operations.

(1) The growing global population and the likelihood of operations in urban settings present significant challenges. Growing citizenry and the presence of rural refugees overwhelm many cities. U.S. forces compete with indigenous increasing populations for the same space, routes, and infrastructure. Dislocated civilians hinder military mobility. Neutral actors may overwhelm an advancing force due to an adaptive enemy with the ability to manipulate populations hostile to U.S. intent by instigating mass civil disobedience, directing criminal activity, and conducting operations in urban and complex terrain. Enemy military troops, criminal gangs, vigilantes, and paramilitary factions hide within the displaced civilians.

(2) Future adversaries will focus on megacities and complex terrain to negate technological overmatches in intelligence and weapon systems, as a means of creating strongholds where they can achieve protection from U.S. effects. Opponents will disperse forces physically using complex patterns over wide areas. The dispersion location provides physical and moral sanctuaries (subterranean tunnels and facilities, religious structures, schools, and hospitals) which offer opponents the greatest advantage and protection from sophisticated U.S. force capabilities. Rampant, poorly planned urbanization and suburban sprawl pose major challenges to weakly

governed states, becoming havens for terrorists, criminals, and other threats seeking to create instability and challenge the rule of law while largely remaining anonymous.

e. Homeland criminal threats, complex catastrophes, or attacks. The U.S. homeland remains vulnerable to attack from extremist groups. Extremists, foreign and domestic, use terrorist tactics in attempts to strike the homeland. Increased collaboration and cooperation between criminal enterprises and other, terror-related, entities may boost the potential for successful attacks significantly. WMD and related technologies proliferation will continue; this represents the greatest future threat to the U.S. The enemies' efforts to develop or acquire WMD, their delivery systems, or their underlying technologies constitute a major threat to homeland security.

#### **2-4 Multi-domain battle implications summary**

a. To conduct integrated security operations and cross-domain maneuver, Army forces must employ mutually supporting capabilities across the land, air, maritime, space, and cyberspace domains to create conditions designed to generate overmatch, present multiple dilemmas to the enemy, and enable Joint Force freedom of movement and action within those domains.

b. The smaller continental-based Army force must be designed, equipped, and trained to think, leverage, and operate across all domains.

c. U.S. Army forces must align the right mix of forward-deployed and rotational forces regionally, along with pre-positioned equipment and the capacity to deter aggression, protect U.S. national interests, and provide situational awareness. Forward-deployed Army forces can present multiple dilemmas and create multiple opportunities for joint force commanders.

d. The Army must deploy formations configured uniquely for immediate transitioning to cross-domain maneuver and integrated security operations.

e. The complex environment will challenge leaders to be astute culturally and proficient in operating in the human terrain and exercising multinational partner integration to enhance movement and maneuver capabilities across-domains, develop situational understanding, and enable consolidation of gains.

f. The dispersed nature of operations and tempo in the operational environment requires subordinate commanders to adapt tactics and engagements in all domains, and requires decentralization of capabilities, information, and decision-making authorities to the lowest practical echelon, minimizing control to the essential unit, and accepting prudent risk.

g. Maneuver support forces must be commensurate with maneuver forces with appropriate lethal and nonlethal capabilities to generate effects across all domains to achieve overmatch.

h. To achieve depth, simultaneity of action, and accomplish campaign objectives, an echelon above brigade headquarters is required to conduct route synchronization, coordinate sustainment efforts, conduct intelligence synchronization, and organize and resource efforts to establish

integrated security operations and consolidate gains for multiple brigades in linear and non-linear operational frameworks.

## **2-5. Conclusion**

Threats to maneuver support activities may be coordinated or independent of one another, but their effects are frequently cumulative. The likelihood of encountering and engaging the enemy during support operations cannot be underestimated. Dispersed and noncontiguous Army formations create vulnerabilities as lines of communication become difficult to secure continuously, thus affecting sustainment, force regeneration, and human and material evacuation. Mobility will be the dominant attribute of joint and multinational forces. The network of ground lines of communications in theater will be a critical component of campaigns and tactical operations, and will remain the foundational concept of freedom of movement and action.

## **Chapter 3 Meeting the Challenges**

### **3-1. Introduction**

This chapter describes how maneuver support forces, as part of joint, interorganizational, and multinational teams, understand and shape the environment, mitigate the effects of obstacles and hazards, and protect the force, populations, resources, and activities to enable cross-domain maneuver and integrated security operations.

### **3-2. Military problem**

To meet the demands of the future operating environment, how do maneuver support forces enable the Army, joint, interorganizational, and multinational forces to deter conflict, and conduct and support cross-domain maneuver throughout the conflict continuum to maintain freedom of movement and action, protect vital U.S. interests, and create sustainable outcomes consistent with national objectives?

### **3-3. Central idea**

The Army, as part of the Joint Force, engages regionally to prevent conflict, shape the environment, and create multiple options for responding to and resolving crisis. Maneuver support forces conduct, integrate, and support security and cross-domain maneuver at all echelons, ensuring joint, interorganizational, and multinational forces freedom of movement and action to achieve national objectives. Regardless of the operating environment's complexity or the degradation of systems, maneuver support forces provide unique technical capabilities to understand and shape the environment, mitigate the effects of obstacles and hazards, protect the force, populations, resources, and activities throughout the conflict continuum.

### **3-4. Solution synopsis**

a. Maneuver support forces integrate security operations and conduct cross-domain maneuver throughout the support area. Integrated security operations require synchronization and employment of capabilities at echelon in all domains to develop situational understanding continually, protect the force, and create a secure environment. Integrated security coupled with

military activities, such as security force assistance, foreign internal defense, DSCA and homeland defense, deter conflict and influence the human perspective. Such missions are critical at home and abroad. Maneuver support forces, regardless of echelon, leverage situational understanding and unique technical capabilities and information to shape the environment and integrate security. Technical capabilities include police operations, WMD activities, combat and general engineering, and counter explosive hazards while technical information includes geospatial, police intelligence and WMD technical information. When executed by a diverse staff, comprised of maneuver support, special operations officers and noncommissioned officers, and other joint, interorganizational, multinational personnel integrated security results in the protection of national interests worldwide and allows maneuver commanders to focus on readiness, training, and cross-domain maneuver.

b. Integrated security is an ongoing effort throughout the conflict continuum, while cross-domain main maneuver occurs once deterrence fails. Cross-domain maneuver leverages, integrates, and synchronizes multi-domain effects. Cross-domain maneuver is a supporting activity of multi-domain battle and is the task whereby U.S. forces integrate and synchronize effects across two or more domains to develop windows of opportunity and to ensure freedom of movement and action across the battlefield. Maneuver support forces support and conduct cross-domain maneuver simultaneously. At the operational level, maneuver support forces coordinate effects from all domains to shape the environment and conduct mobility and countermobility operations. At the tactical level, maneuver support forces focus on mobility and countermobility operations predominantly. Operations, regardless of echelon, include gap crossing, obstacle reduction and emplacement, and movement corridor operations to enable freedom of movement and action throughout the operational area.

c. Maneuver support forces leverage technical capabilities and technical information to influence the human perspective, disrupt the enemy's deep fight, and protect coalition forces. Cross-domain maneuver coupled with integrated security operations generate windows of opportunity and the operational depth necessary to defeat enemy forces, secure the environment and consolidate gains. Sustainable outcomes result in achieving national objectives and renewing emphasis on integrated security of national interests.

d. To offset the demand of integrated security and cross-domain maneuver operations across all echelons, maneuver support forces integrate emerging technology such as unmanned aerial systems, artificial intelligence, robotics, and autonomous systems. Improved mobility, fire power, protection, intelligence, mission command, and sustainment enables maneuver support forces to integrate better when providing support at the tactical level. Future materiel solutions, along with an evolved Total Army training methodology and adherence to the mission command leadership philosophy, enables leaders and units to conduct, integrate, and support security operations, cross-domain maneuver, and semi-independent operations simultaneously. Throughout the area of operation, maneuver support forces enhance protection and facilitate freedom of movement and action, ultimately critical to consolidating gains and transitioning to follow on operations rapidly.

e. The essence of mission command, clear commander's intent based on a shared situational understanding and the freedom to exercise discipline initiative, is critical while operating dispersed, semi-independently, or within a degraded network to effect the environment throughout

multiple domains, simultaneously. Leaders at all echelons must have a common understanding of the environment, share trust, and maintain the decision-making skills to meet the commander's intent. Leaders must improve their professional understanding of maneuver support equities, planning factors, and diverse technical information available to conduct and support cross-domain maneuver.

f. Maneuver support forces must capitalize on opportunities to interoperate and integrate with special operations and other joint, interorganizational, and multinational partners to provide flexibility and depth in planning and executing operations for the joint force commander and maneuver support formations. An improved joint, interorganizational, multinational partnership enhances the Army's ability to understand and shape the environment and synchronize effects.

g. Vulnerabilities increase because of dispersion and semi-independent operations. The expansion of the area of operation and extended lines of communication mean maneuver support forces will face challenges with the simultaneous shaping, mobility, and countermobility operations demands at the tactical and operational level. To support cross-domain maneuver and integrated security operations in the 2030 operating environment, improved mobility, fire power, protection, intelligence, mission command and sustainment systems and equipment are needed to enable maneuver support. Balancing maneuver support forces across the components requires a Total Army approach to improve readiness.

### **3-5. Components of the solution**

a. The AFC-MS consists of two component solutions which are central for future maneuver support formations to accomplish operational objectives. The components of the solutions are integrated security operations and cross-domain maneuver.

b. Integrated security operations.

(1) Commanders integrate security across all domains and echelons with reconnaissance and security, and synchronize joint, interorganizational, and multinational partners, to develop comprehensive situational understanding and establish a secure environment. Maneuver support forces conduct and maintain integrated security operations throughout the conflict continuum, at home and abroad. Integrated security supports the prevention of adversary action through proactive measures, increasing the perceived cost to an unacceptable level. Maneuver support efforts and presence enhance situational understanding, serve as a deterrent, and provide appropriate security throughout the support area and along movement corridors. Maneuver support forces enable and support integrated security operations to provide joint force commanders at every echelon with reaction time and maneuver space.

(2) Strategic environment. As a part of a joint, interorganizational, and multinational team, the Army must operate in the forward regions, the approaches, and the homeland to secure the Nation. Army forces must understand and mitigate attacks or disasters in the homeland, while simultaneously supporting combatant commander strategic objectives and military readiness. Maneuver support forces provide capabilities to support strategic objectives at home and abroad. Daily missions, technical information, and technical planning, conducted by maneuver support forces worldwide, shape the environment; support counter-WMD (CWMD) activities; and provide deterrence and defense of the homeland defense and support to civil authorities.

(3) Shaping the environment. Maneuver support forces enhance partner activities and establishes long-term relationships fostering mutual trust and confidence, to promote a more stable environment, and set the conditions to prevail during armed conflict. Maneuver support forces shape perceptions, influence the behavior of friendly and enemy personnel, and other actors within the operational environment; develop partner nation and friendly military capabilities for self-defense increasing local, regional, and worldwide stability; improve situational understanding; and build relationships to enable strategic access for U.S. forces worldwide. Maneuver support forces are critical to the planning and protection of physical assets deemed essential to mission success. Maneuver support forces provide essential services to improve the safety, livelihood, and confidence of U.S. citizens. Maneuver support efforts serve as deterrents, ensure a ready force, and counter threats to assets at home and abroad.

(4) CWMD. The Army counters WMD through four activities: WMD proliferation prevention, WMD counter-proliferation, CBRN defense, and CBRN consequence management. Trained and ready maneuver support forces prepare for, prevent the acquisition of, protect from, respond to, assess, mitigate, and recover from WMD employment worldwide. These forces retain the flexibility to interoperate and integrate with special operations forces and other joint, interorganizational, and multinational partners by providing unique assessment and characterization capabilities. Improving relationships and consolidating resources across partners allows executing global operations to counter WMD.

(5) Homeland defense. The Army protects the U.S homeland, territories, and sovereignty against internal and external threats, aggression, and other hostile actions. The Army conducts homeland defense operations across all domains and in the forward regions and approaches to deter and defeat attacks. This in-depth defense strategy allows the Department of Defense (DOD) to engage adversaries within and as far from U.S. shores as possible, while defeating attacks as they approach the homeland. Force posture, readiness, force protection, and antiterrorism activities are defensive signs and measures to reduce vulnerability from attacks. Force protection and antiterrorism integrate into all Army operations and awareness pervades every mission. Maneuver support forces provide technical information, police operations, and CWMD information to protect and defend camps, posts, stations, and the homeland.

(6) DSCA. Army forces, as part of the Joint Force, help mitigate attacks and disasters within the homeland through DSCA operations. Operations include CBRN consequence management, rescue engineering, domestic disaster relief, defense support of civilian law enforcement agencies, and other designated support. Consequence management includes the plans, policies, procedures, training, and equipment needed to mitigate loss of life and property and to assist with response and

short-term recovery after a CBRN event. Rescue engineering capability provides technical support and advice to task force leaders, commanders, to assess damage, mitigate physical, and health hazards, enable safe entry, and ensure movement through a disaster site to assist rescue and lifesaving operations. The U.S. Army deploys specially trained and equipped structural engineers and teams to augment federal urban search and rescue forces, incident support teams, military technical rescue organizations, and general-purpose troops during urban operations, structural collapse incidents, and other disasters. Through technical capabilities and a Total Army approach, maneuver support forces are ideally suited to provide DSCA.

(7) Operational environment. At the operational level, the future threat will comprised a combination of anti-access and AD transnational criminal organizations, insurgents, and technically advanced lethal maneuver forces, to impede friendly force projection capabilities and disrupt extended lines of communication. Operational reach depends on the ability to mitigate conventional and irregular threats and hazards across all domains. Maneuver support forces assist the joint force commander in understanding the operational environment through unique technical capabilities and information. Echelon above brigade headquarters integrate maneuver support multifunctional and functional brigades with other joint, interorganizational, and multinational partners to understand and shape the environment, visualize the terrain, control terrain, defeat enemy forces, and protect populations, infrastructures, and activities.

(8) Situational understanding. Maneuver support forces leverage persistent multi-domain sensors to identify, analyze, and advise the joint force commander. Maneuver support forces provide technical information to the intelligence enterprise to improve population, terrain, and physical environment situational understanding. Technical information spans all domains and includes geospatial information, police intelligence, forensics, biometrics, and terrain and infrastructure assessments. This technical information is critical to increased situational understanding, planning, and operational execution across all phases and echelons.

(9) Geospatial information and services. The Army provides geospatial information to joint, interorganizational, and multinational partners to underpin the common operating picture and provide geographic referencing to all functional assessments. Geospatial teams provide maneuver commanders and staffs with terrain visualization products, tactical decision aids, and mission tailored data through a standard and shareable geospatial foundation. Increase resolution and network integration will improve geospatial information and services in the future. Geospatial information enhances understanding of the physical environment and the environment's effect on both friendly and adversary forces with an increased emphasis on complex and urban terrain, and subterranean mapping and visualization.

(10) Police intelligence. Military police conducting police intelligence operations support future Army forces with information and intelligence fusion to develop a clear understanding of criminal and security threats throughout the complex operational environments. Future technologies, systems, and processes enhance collection and analysis capabilities and feed police information and intelligence into the operations process.

(11) Forensics. Forensics is defined as, the use of science and technology to investigate and establish facts in criminal or civil courts of law; however maneuver support forces provide

expeditionary forensics to identify, characterize, and target individual threat actors, explosives, CBRN, and cyber-crimes. Forensics capabilities impede the threat's ability to act with anonymity and impunity and link them to threat networks; identifies new and improvised materiel, technologies, and countering explosive hazards employed by threat entities; and analyzes events to understand how threats planned and conducted operations against coalition forces. Forces will have enhanced expeditionary exploitation lab capabilities and faster, reach back capability. Forces at all echelons must understand basic evidence collection procedures to protect incident sites and to support site exploitation fully. Expeditionary forensics analysis provides actionable intelligence at the tactical level. This enhances threat monitoring, tracking, targeting, prosecution, while supporting rule of law. Forensics, in the future, will improve security and situational understanding at home and abroad while limiting the enemy's ability to operate with anonymity.

(12) WMD information. WMD information is a process of collecting, analyzing, and applying an assessment of an adversaries WMD related science, materiel, and programs so that Army forces, operating with joint, interorganizational, and multinational partners, counter the spread of WMD-related materials and technologies. When operating in a WMD environment, the commander needs to make proactive decisions to enhance survivability. These decisions must be supported by information, awareness, and understanding. The commander must know the implications of the character, nature, or subtleties of information about WMD threats and CBRN hazards; neutral, enemy, and friendly activities that may result in operating in a CBRN hazardous environment. Future Army forces must have the capability to collect, analyze, and apply WMD information assessment to recognize the change and magnitude of effect concerning or regarding WMD threats and CBRN hazards.

(13) Terrain and infrastructure assessments. Maneuver support forces assess, establish, and upgrade terrain and infrastructure to include multiple staging areas, bases of operation, and support areas throughout the conflict continuum. Maneuver support forces utilize near real time remote assessment of potential nodes, infrastructure, and lines of communications using satellite and other multi-domain sensor capabilities to support operational requirements. This remote capability allows for assessments with reach back engineering capability for technical analysis of infrastructure and lines of communication required for sustainment operations. The same assessments assist with other activities such as security force assistance, and DSCA.

(14) Technical capabilities. Maneuver support forces provide unique technical capabilities (general engineering, contingency basing, police operations, detention operations, and support area operations) to integrate security across the ROMO. These unique capabilities reside within the maneuver support functional formations at echelons above brigade and are enhanced through increased joint, interorganizational, multinational and special operations forces partnership, reach back capability and expeditionary techniques. Maneuver support forces provide technical capabilities throughout all operations and activities to establish public order and safety, secure borders, protect population centers and people, hold individuals accountable for criminal activities, control activities of individuals or groups which pose a security risk, reestablish essential civil services, and set conditions to support stability and consolidate gains.

(15) General engineering. Engineers provide surface and subsurface construction support to assist security operations, restoring essential services, supporting governance and economic

growth, and infrastructure development, repair, and maintenance. General engineering capabilities are critical to enable a secure environment and include capabilities (improved expeditionary construction horizontal, vertical, prime power; diving), enable expeditionary logistics, and activities which modify, maintain, or protect the physical environment. Maneuver support forces integrate environmental protection considerations into operational plans and support contingency basing and general engineering efforts. Maneuver support forces provide improved construction to harden critical command and control facilities and systems to reduce the effects of multi-domain anti-access and AD. In the future, engineer elements will integrate manned and unmanned construction equipment to augment general engineering Soldiers, increasing capacity and efficiency.

(16) Base camp. To conduct sustained operations on land, maneuver support personnel help identify required facilities and bases as part of the operational planning process, and then perform the functions (master planning, design, real estate management, construction, closure, and others) to provide bases. Maneuver support forces provide an understanding of the physical environment on contingency basing to include the effects of weather, climate, hydrology, and terrain. Future contingency bases will include expedient, modular, scalable packages to support security and sustain the force.

(17) Police operations. Maneuver support forces, through increased joint, interorganizational, and multinational partnership and enhanced expeditionary lab and investigative equipment, conduct police operations to establish and maintain civil security and civil control, enable the rule of law, and disseminate police information and intelligence collected on enemy and criminal networks and activities. Police operations include law enforcement, traffic management and enforcement, anti-terrorism and force protection, criminal investigations, military working dog patrols, host nation police training and support, police engagement, support to U.S. customs and border control, boundary security, support to civil law enforcement, and forensic analysis or biometric identification capabilities support. Future forces possess nonlethal capabilities to deny critical areas to the enemy, minimize civilian casualties, limit unintended infrastructure damage, and increase force protection.

(a) Future police nonlethal capabilities provide flexible alternatives to complement or preclude the use of lethal capabilities, enabling Army forces to identify hostile intent and tailored responses. Future nonlethal capabilities incorporate into existing and emerging vehicles, platforms, airframes, and other systems to complement lethal systems and increase options in the future operating environments. As hybrid and irregular threats expand, police operations will serve to enhance situational understanding, provide stability, and neutralize the enemy's deep fight.

(b) Detention. Military police conduct detention operations and take responsibility for securing and caring for detainees as far forward as the situation allows to reduce detainee impact on maneuver forces. Military police control and protect U.S. military prisoners and detainees, support the rule of law, build partner capacity, and ensure commanders retain freedom of action to accomplish the mission. By integrating joint, interorganizational, and multinational teams and special operations forces, military police units reduce recidivism, obtain increased situational understanding of the enemy, and ease the transition from conflict to stability operations.

(18) Support area operations. Maneuver support forces must obtain commensurate staff capabilities necessary to exercise mission command in support areas. Maneuver support forces integrate joint, interorganizational, multinational partners to control and coordinate effects across all domains. Maneuver support forces provide area and local security to protect friendly forces, bases, installations, movement corridors, critical assets, high-risk personnel, ports, and terminals during operations. Maneuver support forces conduct protective services, response force operations, area damage control, antiterrorism, and physical security. Enhanced sensors, surveillance, and defensive mechanisms improve situational understanding and security while freeing up manpower for decisive action. Maneuver support forces provide security to support offensive, defensive, and stability operations, often simultaneously conducting, integrating and supporting security operations and cross-domain maneuver. This simultaneity provides security and stability throughout the area of operations to continuously influence the population, shape the environment, and ensure freedom of movement and action.

(19) Tactical environment. Future threats will focus efforts and force tactical engagements in populated areas, megacities, and other areas of complex terrain, while avoiding decisive engagements that affect U.S. national interests. Adversaries will center operations in locations where a lack of governance and rule of law create ungoverned or insecure environments and disaffected populations allow hybrid threats to thrive. Maneuver support forces provide situational understanding, technical information, and technical capabilities consistently across all domains and echelons. To ensure security operations at the tactical level, maneuver support forces also provide technical information, survivability, populace and resource control, CBRN reconnaissance and surveillance, and counter explosive hazard capabilities continuously.

(20) Situational understanding. Maneuver support forces provide technical expertise to advise the commander on threats and hazards. Leaders plan for, reduce, and negate effects of explosive hazards through situational understanding and training on detection, marking, and reporting explosive hazards. Forces leverage the protection and standoff afforded by unmanned systems to detect threats, provide early warning, and identify hazards from outside the effects radius. Multifunctional support formations develop and maintain access to and control of the deep area. Maneuver support forces access and utilize multi-domain sensors and systems to enhance situational understanding, support the commander's decision-making process, develop windows of localized control, and protect the force, population, resources, and activities.

(21) Survivability. Survivability operations are those military activities that alter the physical environment to provide or improve cover, concealment, and protection which permit forces to retain the ability to fulfill their primary mission. Maneuver support forces conduct survivability operations to include constructing, repairing, or maintaining fighting and protective positions, hardening other structures and facilities, and conducting operational decontamination. Improvements in base defense capability packages, nonlethal effects, cover, concealment, deception methods, advancements in manned and unmanned teaming, and vehicle and personal protection improve key leader, Soldier, and unit survivability.

(22) Populace and resource control. Populace control provides security for indigenous people, mobilizes human resources, denies enemy access to the population, and detects and reduces the effectiveness of enemy agents. Resource control regulates the movement or consumption of material resources, mobilizes material resources, and denies materiel to the enemy. Maneuver support forces play a critical role in the joint, interorganizational, and multinational partners' execution of tasks such as dislocated civilian operations, noncombatant evacuation operations, border security, regulating and securing access to valuable natural resources, stopping illicit trade in natural resources, police engagement, and associated efforts to transition to the rule of law and provide logistics security support.

(23) CBRN reconnaissance and defense. The Army conducts reconnaissance to detect CBRN hazards and toxic industrial materials. Future forces leverage the protection and early warning afforded by systems to identify CBRN hazards from outside the effects radius. The systems include aerial detection capabilities to confirm or deny chemical, biological, and radiological signatures in suspected locations. Reconnaissance operations require increased CBRN early warning capabilities and single sensors with the ability to detect the range of CBRN hazards.

(24) Countering explosive hazards. Maneuver support forces counter explosives by detecting explosives and explosive components, mitigating explosives hazard's effects, and preventing or neutralizing explosives hazards to protect personnel, equipment, facilities, and maintain mobility. To counter explosives hazards, forces identify and provide early warnings of suspected explosive devices against vehicles, command posts, and aircraft in near real time. Maneuver support forces assist in the intelligence process by performing post-blast analysis, fragmentation analysis and site exploitation. Future maneuver support forces require advanced military working dogs, robotic and automated systems capable of detecting, mitigating, and neutralizing explosive hazards.

(4) Mission command during integrated security operations.

(a) Applying the mission command philosophy remains critical to integrated security operations success. Understanding and integrating additional joint, interorganizational, and multinational partners throughout maneuver support formations increases the capability to understand, plan and synchronize efforts across the area of operations. Maneuver support forces, at echelon, contribute to, and build, a maneuver support common operational picture through integrated security operations with persistent surveillance and detection techniques. By linking technical information, collected by maneuver support forces at all echelons, leaders develop an accurate common operational picture. Integrating maneuver support forces into special operations, joint, interorganizational, and multinational formations, and organizations increases the flexibility and depth available to the joint force commander.

(b) Mission command, derived from effective and proactive mission analysis, enables maneuver support forces to overcome time and distance and allow these multi-domain assets to align as needed to support semi-independent operations. Through mission command, commanders and staffs implement clearly defined missions and intent, and establish clear command and support relationships. In a degraded network environment, this understanding empowers leaders to seize, retain, exploit the initiative, and consolidate gains.

c. Cross-domain maneuver.

(1) Cross-domain maneuver develops windows of opportunity to gain positional advantage, achieve overmatch, and defeat enemy forces. Cross-domain maneuver requires a combination of layered, synchronized, and sequenced Joint Force and mission partner capabilities. To generate operational depth, maneuver support forces must understand, synchronize, leverage, and combine the effects and capabilities from all domains. At the operational level, maneuver support forces support and conduct cross-domain maneuver throughout the support area and along all movement corridors. At the tactical level, maneuver support forces support cross-domain maneuver to enable freedom of movement and action.

(2) At the operational level, the future threat will be comprised of a combination of anti-access and AD transnational criminal organizations, insurgents, and technically advanced lethal maneuver forces to impede friendly force projection capabilities and disrupt extended lines of communication. Operational reach depends on the ability to mitigate conventional and irregular threats and hazards across all domains in complex terrain. By combining technical capabilities and information, maneuver support forces support and conduct shaping, mobility, and countermobility operations. Maneuver support forces leverage technology to improve camouflage, concealment, deception, reduce network signatures, leverage and synchronize multi-domain effects, and identify, assess, mitigate and reduce hazards. Maneuver support multifunctional brigades conduct cross-domain maneuver throughout the support area and to support movement corridor operations. Functional brigades augment tactical formations to facilitate the brigade combat team's (BCT) cross-domain maneuver and freedom of movement.

(3) Understanding the environment and shaping operations. At the operational level, maneuver support forces influence the population and shape the terrain. Through consistent engagement and indirectly through ongoing security operations, maneuver support forces increase situational understanding, influence the populace and erode support for the enemy. Maneuver support forces disrupt and block the enemy's deep attack through deliberate integration, synchronization, and sequencing of effects across all domains. Situational understanding and shaping operations in the future require persistent surveillance and detection techniques and capabilities, a more integrated and multi-domain common operational picture, and a revision of the staff composition to improve understanding, synchronization and execution of tasks. To shape the terrain, maneuver support forces use lethal and nonlethal systems with natural and manmade effects to deny an adversary freedom of movement preventing the enemy from gaining a positional advantage. Maneuver support forces also rely on improved camouflage, concealment, and deception during shaping, mobility, and countermobility operations.

(4) Cross-domain mobility. Cross-domain mobility operations require maneuver support forces to understand, synchronize, leverage, and combine the effects and capabilities from all domains to generate depth. Maneuver support forces execute traditional mobility operations to include breaching, gap crossing, bridging, and route clearance. Maneuver support forces enhance mobility through explosive hazard reduction, detention operations, displaced civilian operations, CBRN detection and mitigation, and route and airfield construction and maintenance. Through robotic autonomous systems and artificial intelligence, maneuver support forces gain increased capability and capacity to support cross-domain maneuver along multiple lines of communication.

Technology will enhance obstacle detection, reduction, and proofing capabilities to reduce overall risk to the force. A holistic approach enables maneuver support forces to develop situational understanding, reduce obstacles and hazards, and ensures freedom of movement and action.

(5) Cross-domain movement corridor operations. Maneuver support forces synchronize, leverage, and combine the effects and capabilities from all domains to support movement corridor operations from ports of debarkation to brigade support areas. Along with sustainment forces, maneuver support forces will improve speed and security of expeditionary sustainment operations. Collectively, maneuver support and sustainment forces synchronize and conduct route assessments, route security and as needed generate operational depth, synchronizing effects across multiple domains to enable freedom of movement. Maneuver support forces exercise mission command and develop situational understanding using persistent surveillance and sensors, robotics, autonomous systems, and manned and unmanned teaming along the length of the lines of communications. Maneuver support forces integrate technical capabilities and information with technology and improved platforms to enhance route assessments, traffic control operations, populace and resource control, hazard identification and reduction, combined arms breaching, gap crossing, and clearance activities.

(6) Cross-domain countermobility. Countermobility operations include emplacing or enhancing the effects of natural and man-made obstacles to deny the enemy freedom of movement and maneuver. By synchronizing cross-domain effects, maneuver support forces enable the joint force commander's ability to gain positions of advantage and achieve operational objectives. Maneuver support forces utilize geospatial assessments and technical planning to implement natural and manmade effects to fix, turn, block, and disrupt the enemy's freedom of movement. Emplaced obstacles increase time for target acquisition and weapon effectiveness. Maneuver support forces layer, synchronize, and combine the effects and capabilities from all domains with advanced lethal and nonlethal terrain shaping techniques to develop a layered approach to defeat the enemy's deep fight. Future countermobility capabilities provide the joint forces commander options to deter non-combatative movement and to assist in discriminating combatants from noncombatants. Deep delivered obstacles provide the ability to deny or delay access to sensitive sites by enemy forces, terrorists, or criminal elements until joint forces can secure the sites. Future countermobility capabilities will be hardened and controlled through a secure Army information network to prevent the enemies attempt at disrupting the emplaced lethal and nonlethal effects.

(7) Tactical cross-domain maneuver support. Future threats will focus efforts and force tactical engagements in populated areas, mega-cities, and other areas of complex terrain; while avoiding decisive engagements that affect U.S. national interests. Adversaries will center operations in locations where a lack of governance and rule of law create ungoverned or insecure environments and disaffected populations allow hybrid threats to thrive. Maneuver support capabilities, conducted across all echelons, generate the time and space necessary for BCTs to conduct cross-domain maneuver or semi-independent operations. Maneuver support forces, aligned with the BCTs, simultaneously integrate security, and support cross-domain maneuver. Through technical skills and capabilities, technology integration, and improved training, maneuver support forces support and conduct mobility, and countermobility operations, and enable freedom of movement.

(8) Mobility. Maneuver support forces provide technical skills and capabilities to improve situational understanding and security within the BCT's area of operation. Maneuver support forces provide technical skills and capabilities at the operational and tactical level. Maneuver support forces will have technology to identify the most optimal routes for mobility and movement corridors and breach and gap crossing locations. Maneuver support forces access and utilize multi-domain sensors and systems to detect and identify obstacles and hazards from outside the effects radius. Maneuver support forces conduct traffic control, CBRN reconnaissance, reduce obstacles and hazards, emplace assault bridging, and provide area and route clearance to enable freedom of maneuver and action. Future maneuver support mobility capabilities include networked robotic autonomous breaching, bridging, and clearance systems with the ability to support the future BCT's vehicle platforms.

(9) Countermobility. Maneuver support forces within the BCT support countermobility operations by integrating terrain shaping obstacle capabilities to deny the enemy freedom of movement and maneuver while enabling friendly freedom of action to support cross-domain maneuver. Maneuver support forces employ effective combined arms obstacle capability to allow Army forces to dictate the terms of the enemy's movement and maneuver while maintaining friendly freedom of action. This improves the Army's ability to gain and maintain the initiative and disrupts the enemy's actions and decisions. Maneuver support forces plan, emplace, and control reinforcing obstacles in depth, integrating terrain, observation, and fires to present the enemy with multiple dilemmas. Employing integrated obstacles capabilities simultaneously at close, mid, and deep ranges disrupts enemy tempo and enhances friendly force lethality allowing friendly forces to gain and maintain the initiative throughout the area of operations.

(10) Future countermobility capabilities possess networked-embedded communications, controllable (human in the loop) lethal and nonlethal effects, rapid employment, and quick recoverability resourced at the lowest level to enable decentralized operations. Additionally, future countermobility capability systems will include sensors deployed as part of the munitions field with the ability to provide information to the operator and the Army information network about potential targets near the deployed effectors. Long range communication to deployed components will rely on external assets such as satellite or aerial vehicle relayed communications.

(11) Mission command during cross-domain maneuver. Through mission command, commanders and staffs implement clearly defined missions and intent. Understanding the intent empowers leaders to seize, retain, exploit the initiative, and consolidate gains regardless of the condition of the Army's information network.

(12) Maneuver support forces integrate the Army's information network and staff structures commensurate with BCTs. Maneuver support forces improve their professional understanding of maneuver support equities, planning factors, and the diverse technical information and capabilities available to enable cross-domain maneuver. Maneuver support forces integrate additional joint, interorganizational, multinational partners and special operations forces to enhance the ability to shape the human perspective and ease transitions. Mission command, derived from effective and proactive mission analysis enables maneuver support forces to overcome the challenge of time and distance.

(13) Integrated with unmanned air systems, sensors, manned and unmanned teaming, artificial intelligence, extensive reach back capability, and technical expertise provided by functional brigades and the generating force enables maneuver support forces to plan, synchronize, and align to support simultaneous integrated security operations and cross-domain maneuver operations. Mission command requires the application of art and science to ensure the appropriate maneuver support capabilities engage at the right place and time to support and conduct cross-domain maneuver and enable freedom of movement and action.

### **3-6. Supporting ideas**

a. This section builds upon the preceding areas and describes the warfighting functions' mutual support and dependencies. The warfighting functions are interdependent and as such, maneuver support forces both enable and rely on other warfighting functions to conduct, integrate, and support security and cross-domain maneuver effectively and efficiently. This interdependence deters conflict, protects national interests, and enables freedom of movement and action.

b. The AFC-MS describes how maneuver support forces provide mission command for the support area at all echelons, manage support area operations, and conduct, integrate, and support security operations and cross-domain maneuver throughout the conflict continuum. These actions enhance readiness and enable other forces to focus on their respective missions.

c. Movement and maneuver.

(1) Mutual support.

(a) The AFC-MS addresses support to movement and maneuver in detail throughout. Maneuver support forces integrate, conduct, and support security operations and cross-domain maneuver. Planning, coordination and synchronization of these missions occurs in partnership with the maneuver force. Maneuver support forces manage the support area and coordinate protection and support for maneuver headquarters and forces arrayed throughout the area of operation. Executing security, movement corridor, and support area operations enables freedom of movement and action and allows commanders to focus on readiness and decisive action. Maneuver support forces play an integral role in coordinating air operations throughout the support area especially forward arming refuel point and landing zones establishment. At the tactical level, maneuver support forces conduct CBRN reconnaissance, detection, decontamination, police operations, detention operations, populace and resource control, survivability, mobility, and countermobility operations to enhance security, provide early warning, and support cross-domain maneuver.

(b) Maneuver support forces partner with special operations forces during surgical strike and special warfare operations throughout the conflict continuum and must work collaboratively in support shaping operations, military activities, and CWMD activities. Mission analysis and task organization of maneuver support forces ensures technical information and capabilities are appropriately arrayed in support of semi-independent operations.

(2) Dependencies. Maneuver support forces require a tactical combat force to counter level III threats in the support area and movement corridors.<sup>3</sup> Maneuver and maneuver support forces must work together to determine by-pass criteria and movement corridor operations. Maneuver support forces are reliant on aviation forces to conduct air-ground operations. Aviation formations enhance reconnaissance and provide attack, cargo, utility, and air medical evacuation helicopters, unmanned aircraft, and air traffic services systems to provide support to maneuver support forces.

d. Fires.

(1) Mutual support. Maneuver support forces manage the support area, coordinating protection and support for fires assets throughout the area of operation. Maneuver support forces enable the freedom of movement necessary for fires to respond and support cross-domain maneuver. Maneuver support forces are also instrumental in developing the critical and protected assets list.

(2) Dependencies. Fires units support joint combined arms operations by integrating and delivering fires through multiple domains in time and space. Fires organizations at all echelons task organize capabilities to support the operation and maneuver scheme providing shaping fires, air and missile defense fires, and fire support by integrating joint, Army, interorganizational, and multinational capabilities across all domains to enable friendly freedom of action. Fires formations support integrated security operations across all domains by optimizing joint interorganizational and multinational capabilities that provide appropriate coverage for the support area, lines of communication, and critical and protected asset lists.

e. Intelligence.

(1) Mutual support. Maneuver support forces manage the support area, coordinating protection and support to intelligence assets throughout the area of operation. Maneuver support forces partner with intelligence assets during the collection, analysis, and integration of technical information to enhance situational understanding. Technical information includes geospatial, police intelligence operations, CWMD information, and specific elements of forensics. Maneuver support forces also partner with intelligence assets during missions such as, detention operations, populace and resource control, site exploitation, forensics collection, and shaping operations to identify, collect, and exploit information. Maneuver support forces persistent presence and information collection accomplished during the conflict continuum exponentially increase the understanding of the operating environment, human perspective, atmospheric, terrain and infrastructure for commanders at all echelons.

(2) Dependencies. Maneuver support forces rely on intelligence assets to develop the enemy situational template refining the common operating picture for mission planning and operational execution. To support maneuver support forces, intelligence Soldiers station, equip, train, and organize to support a regionally aligned, expeditionary Army. The intelligence enterprise provides Army forces at all echelons with the capability to generate situational understanding to enable maneuver. Deliberate air-ground reconnaissance and security operations remain key elements of intelligence collection. Through information and intelligence fusion, maneuver support and

intelligence forces enhance situational understanding, developing a holistic common operating picture, and providing a detailed intelligence preparation of the battlefield and mission analysis.

f. Sustainment.

(1) Mutual support. Maneuver support forces manage the support area, coordinating protection and support of sustainment assets throughout the area of operation. Maneuver support forces synchronize movement corridor operations and the sustainment footprint for supply, storage, and distribution. Maneuver support forces create windows of opportunity and a secure environment for distribution and emergency resupply to combat forces. Maneuver support and sustainment forces conduct route synchronization; provide contingency basing, support detention, populace, and resource control operations.

(2) Dependencies. Maneuver support forces rely on sustainment assets for seven days of supply, decontamination resources, and life support throughout the support area. Maneuver support forces are dependent on sustainment assets for medical support and force health protection, to support maneuver support elements, detainees, and displaced persons. Maneuver support assets require enhanced medical capability at the point of injury to include advanced trauma and resuscitation skills, and prolonged patient holding abilities to support the future operating environment. Additionally, the increase in existing and emergent health threats to the force must be offset by expanded force health protection capabilities to mitigate disease and non-battle injury casualties from non-traditional agents, CBRN threats and hazards, disease vectors, and toxins.

g. Mission command.

(1) Mutual support. Maneuver support forces manage the support area, coordinating protection and support for headquarters and forces such as, the joint task force, joint force land component command, joint force special operations component commander, and theater enablers such as functional elements, theater commands, space, and cyberspace assets arrayed throughout the area of operation. Through mission command, maneuver support forces task-organize dynamically to support commanders across all echelons. Balancing the art and science of mission command, maneuver support forces conduct, integrate, and support security operations and cross-domain maneuver operations in complex and degraded environments. Maneuver support forces provide technical capabilities and information to enhance the understanding, visualization, planning, coordination, and execution of missions and military activities. Maneuver support forces provide shaping, mobility, and countermobility operations throughout the area of operation, enabling freedom of movement for friendly forces while countering the enemy's movement.

(2) Dependencies. Maneuver support forces rely on higher headquarters for proper mission command to include mission analysis, task organization, and risk management.

(a) Aligning roles and responsibilities and support and command relationships is critical to preparing and supporting each operation or military activity. Risk mitigation includes safety and personnel recovery. Although maneuver support forces assist with personnel recovery, this mission set requires synchronization across all warfighting functions. Maneuver support forces are reliant upon other assets for space and cyberspace offensive and defensive operations and the

DOD Information Network-Army for mission command digital connectivity. Specifically, space forces support the maneuver support forces' ability to move and maneuver semi-independently through a contested environment by providing space force enhancement, space support, space control, and space force application.

(b) Cyberspace operations facilitate cross-domain maneuver and integrate security operations by employing unique technical capabilities that effect the adversary's ability to conduct cyberspace and the electromagnetic spectrum operations, and support efforts to influence populations. Understanding the roles, capabilities, and limitations of all joint, interorganizational, and multinational partners facilitates proactive interoperability measures that ensure the delivery of integrated effects for the joint force commander or lead agency. This understanding and integration is achieved through proactive training, education, and planning between maneuver support forces and joint, interorganizational, and multinational partners. Lastly, maneuver support forces rely on a Total Army approach, habitual alignment, combined training events and proper education to improve integration, readiness, and effectiveness.

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## **Chapter 4**

### **Conclusion**

a. The AFC-MS builds on the AOC, the AFC-MM, and the, multi-domain battle white paper to describe how future Army forces contribute to joint combined arms operations to accomplish campaign objectives throughout the conflict continuum. The AFC-MS describes how maneuver support forces conduct, integrate and support security and conduct cross-domain maneuver.

b. Maneuver support forces provide unique technical capabilities to understand and shape the environment, mitigate the effects of obstacles and hazards, and protect the force, populations, resources, and activities throughout the conflict continuum. Integrated security results in the protection of national interests worldwide and allows maneuver commanders to focus on readiness, training, and cross-domain maneuver. Cross-domain maneuver occurs once deterrence fails. Cross-domain maneuver leverages, integrates, and synchronizes multi-domain effects. Maneuver support forces support and conduct cross-domain maneuver simultaneously. Cross-domain maneuver, coupled with integrated security, generates windows of opportunity and the operational depth necessary to defeat enemy forces, secure the environment, and consolidate gains. Such sustainable outcomes result in the achievement of national objectives and a renewed emphasis on integrated security of national interests.

c. The AFC-MS serves as the intellectual foundation for capability development in the near-, mid-, and far- terms. Appendix B discusses the maneuver support required capabilities.

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## **Appendix B**

### **Maneuver Support Required Capabilities (RCs)**

#### **B-1. Introduction**

Maneuver support RCs describe capabilities needed to execute missions, across all domains, under the conditions described within the AFC-MS. It is not a comprehensive list and requires inclusion of other functional solutions. RCs identify and focus maneuver support capability development in 2020-2040. To conduct, integrate, and support security operations and cross-domain maneuver, maneuver support forces require the following capabilities.

#### **B-2. Maneuver support RCs**

a. Future Army forces require the capability to conduct mobility operations to enable force projection and freedom of movement and maneuver across the ROMO. (AFC-MS: 3-5.c.(1)(b) and (2)(a); AOC: 3-4.b.(4) and B-2.a.(15); ACC: 3-5.c.(4) and B-3.d.)

b. Future Army forces require the capability to conduct countermobility operations to shape terrain and enhance the effects of natural and manmade obstacles to deny an adversary freedom of movement and maneuver across the ROMO. (AFC-MS: 3-5.c.(1)(d) and (2)(b); AOC: 3-3.e. and B-2.a.(15); ACC: 3-5.c.(4) and B-3.d.)

c. Future Army forces require the capability to conduct survivability operations to reduce casualties and preserve combat power across the ROMO. (AFC-MS: 3-4.a.(3); AOC: 3-5.a.(4) and B-2.a.(15); ACC: 3-5.c.(4) and B-5.a.)

d. Future Army forces require the capability to conduct general engineering to enhance protection, enable expeditionary logistics, and build and maintain infrastructure across the ROMO. (AFC-MS: 3-5.b.(5,6); AOC: 3-4.b.(5) and B-2.a.(13); ACC: 3-5.c.(4))

e. Future Army forces require the capability to generate, analyze, manage, and disseminate geospatial information to increase the understanding of the physical environment, support decision making, and enhance the movement, maneuver, preservation, and sustainment of the force across the ROMO. (AFC-MS: 3-5.c.(2); AOC: 3-4.b.(4) and B-2.a.(15); ACC: 3-5.c.(4) and B-3.d.)

f. Future Army forces require the capability to plan and design, construct, operate, transfer and close base camps with integrated protection to provide a protected location from which to project and sustain combat power across the ROMO. (AFC-MS: 3-4.c.(3); AOC: 3-3.e.(4); ACC: 3-5.c.(4) and B-6.e.)

g. Future Army forces require the capability to counter explosive hazards to enable logistics, protect personnel, equipment, and facilities, and maintain freedom of movement across the ROMO. (AFC-MS: 3-5.b.(4); AOC: 3-4.b.(5) and B-2.a.(15); ACC: 3-5.c.(4) and B-3.d.)

h. Future Army forces require the capability to conduct detention operations to shelter, sustain, guard, protect, and document populations (detainees and U.S. military prisoners) as a result of military or civil conflict or to facilitate criminal prosecution across the ROMO. (AFC-MS: 3-5.b.(11); AOC: 3-4.b.(4) and B-2.a.(13); ACC: 3-5.c.(4) and B-5.a.)

i. Future Army forces require the capability to conduct military police operations to protect populations and resources, facilitate and preserve the rule of law, and help counter hybrid threats across the ROMO. (AFC-MS: 3-5.b.(2)(b); AOC: 3-3.g.(4) and B-2.a.(13); ACC: 3-5.c.(4) and B-5.a.)

j. Future Army forces require the capability to conduct CBRN reconnaissance and defense activities to identify, prevent the employment of, and mitigate CBRN effects to minimize or negate the vulnerabilities of WMD across the ROMO. (AFC-MS: 3-5.b.(3)(d); AOC: 3-4.b.(5) and B-2.a.(5); ACC: 3-1.b., 3-5.b., 3-5.d.(3)(c), and B-5.a.)

k. Future Army forces require the capability to support civil authorities in the homeland to save lives, limit human suffering, and preserve critical infrastructure across the ROMO. (AFC-MS: 3-5.b.(1)(c); AOC: 3-3.e. and B-2.a.(6); ACC: 3-1.b., 3-5.b.(5), 3-5d.(3), and B-5.b.)

l. Future Army forces require the capability to conduct forensics activities to identify, characterize, and target individual threat actors, explosives, CBRN, and cyber-crimes across the ROMO. (AFC-MS: 3-5.b.(2)(a); AOC: 3-3.g. and B-2.a (1)); ACC: 3-5.c.)

m. Future Army forces require the capability to conduct movement corridor operations to protect and enable movement along a route. (AFC-MS: 3-5.c.(1)(c); AOC: 3-3.e.f.g., B-2.a.(16); ACC: 3-5.d.)

n. Future Army forces require the capability to conduct CWMD operations to protect forces, populations, and resources across the ROMO. (AFC-MS: 3-5.b.(1)(b); AOC: 3-4.b.(5), B-2.a.(5); ACC: 3-1.b., 3-5.b., 3-5.d.(3)(c), and B-5.a.)

o. Future Army forces require the capability to conduct police intelligence operations to develop a clear understanding of criminal and security threats across the ROMO. (AFC-MS: 3-5.b.(2)(a); AOC: 3-3.g. and B-2.a.(1); ACC: 3-5.c.)

p. Future Army forces require the capability to collect, analyze, and apply the assessment of WMD information to understand WMD threats and CBRN hazards within the operational environment, across the ROMO. (AFC-MS: 3-5.b.(2)(a); AOC: 3-4.b.(5), B-2.a.(5); ACC: 3-1.b., 3-5.b., 3-5.d.(3)(c), and B-5.a.)

q. Future Army forces require the capability to conduct support area operations to influence the population, shape the environment, and ensure freedom of movement and action across the ROMO. (AFC-MS: 3-5.b.(2)(b); AOC: 3-3.e.f.g., B-2.a.(16); ACC 3-5.d.)

r. Future Army forces require the capability to conduct populace and resource control operations to provide security for the populace and regulate the movement or consumption of material resources across the ROMO. (AFC-MS: 3-5.b.(3)(c); AOC: 3-3.f.g. and B-2.a.(13); ACC: 3-5.c.(4) and B-5.a.)

s. Future Army forces require the capability to conduct terrain and infrastructure assessments to understand the physical characteristics and terrain across the ROMO. (AFC-MS: 3-5.b.(2)(a).; AOC: 3-3.c.g. and B-2.a.(1))

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## **Appendix C**

### **Science and Technology**

#### **C-1. U.S. Army technology application**

a. Technological advances and changes in strategic guidance, joint operating concepts, and security challenges require the U.S. Army to innovate and adapt to ensure forces are prepared to accomplish future missions. Adversaries will have access to inexpensive and advanced technologies and a constrained U.S. budget creates conditions whereby adversaries challenge the Army's dominance in many areas. The Army has lost overmatch due to aging major combat

systems, emerging threats from near-peer and regional powers, and transitional terrorist organizations. As the Army transitions from war in the near-term, and faces potential overmatch in many areas, it shifts its investment strategy in science and technology towards the mid-term, developing technological solutions to offset leaner formations, enabling expeditionary focused units, and preventing overmatch. The Army identifies technological ideas in the far-term that are revolutionary in the way it operates.

b. The science and technology objectives identified in this appendix integrate with other joint and Army efforts to eliminate duplicative effort and wasted resources. This appendix summarizes science and technology requirements for the future maneuver support force employing capabilities to integrate security, and conduct and support cross-domain maneuver. Focused science and technology investments and development improve maneuver support forces ability to understand and shape the environment, mitigate obstacles and hazards, and protect the force, populations, resources, and activities. However, many maneuver support technological needs fall outside of the Army overall framework, but are still critical requirements.

## **C-2. Maneuver support priorities**

a. Maneuver support forces understand and shape the environment, mitigate obstacles and hazards effects, and protect the force, populations, resources, and activities to enable cross-domain maneuver, and integrate security operations. Science and technological growth and development aid the future force in employing maneuver support capabilities successfully. Future investment strategies in science and technology enable the Army to meet known and unknown challenge in the near-, mid-, and far- terms.

b. Near-term (through 2020). Near-term technologies include capabilities which emerged from previous science and technology efforts to address shortfalls, current and to 2020. These technologies are funded, programmed, or future additions to the DOD program objective memorandum requiring funding in the next three years. These near-term enablers are critical for maneuver support to enhance future force operations in the very near term.

c. Mid-term (2020-2030). The science and technology areas discussed below are pursued to enable the future Army to implement maneuver support enhancing operations from now to 2030. The mid-term ideas are technological advances to increase capability and capacity of organization leading to a leaner more expeditionary force to gain and maintain overmatch against future adversaries.

(1) Shaping the environment. Maneuver support forces shape perceptions and influence friendly, adversary, and other actors. Future technologies will support this emerging engagement requirement.

(2) CWMD. Conventional forces require future capabilities to engage (disrupt, neutralize, or destroy) a WMD threat safely to prevent its use, and to protect against loss of life and equipment. The future conventional force also requires the capability to stop the transit of WMDs, its delivery systems, or related materials, technologies, and expertise during decisive action to protect against

loss of life. The Army accomplishes this through advances in surveillance and detection capabilities worldwide.

(3) Geospatial. Maneuver support forces require advanced collection, management, analysis, and dissemination tools to provide accurate and timely products for commanders and staffs to better visualize the operating environment and to plan operations accurately. Geospatial engineering integrates multi-domain joint, interorganizational, and multinational imagery and terrain products to the standard and shareable geospatial foundation. Future capabilities include conducting terrain mapping of multi-domains, to include subterranean facilities and structures in support of urban operations.

(4) Police operations.

(a) Police intelligence. Military police require advanced capabilities to synchronize, process, and integrate large volumes of data and information collected across domain sources to enhance and maintain continuous situational understanding of the operating environment on Army installations, DOD corrections facilities, and during police and security operations. Police intelligence data and information can be collected from manned and unmanned intelligence, reconnaissance, and surveillance capabilities, manned and unmanned aerial and ground platforms, autonomous and semi-autonomous sensor systems, and from other processes. Maneuver support forces require advanced technologies and techniques to exploit indigenous networks and networked devices to detect, identify, and track criminal activities in complex environments integrating crime analysis information with criminal intelligence updating the intelligence enterprise and common operating picture. Military police require technology and policy to support integration of police intelligence operations with joint, interorganizational, and multinational entities to include host nation and local law enforcement officials across the ROMO.

(b) Nonlethal. Maneuver support forces require active and passive nonlethal system as an alternative to lethal force for crowd control, targeting without collateral damage, limiting environmental impacts, and minimizing injury risk. Future Army forces require nonlethal capabilities to deny critical areas, minimize civilian casualties, limit unintended infrastructure damage, and increase force protection. Future nonlethal capabilities must be versatile and scalable enough to incorporate in existing and emerging vehicles, platforms, air frames, and other systems. Nonlethal capabilities complement lethal capabilities and increase options in complex and congested operating environments.

(c) Military working dog and detection. Future maneuver support forces employ military working dogs and other systems to detect explosive materiel, weapons, narcotics, and personnel to integrate security and support cross-domain maneuver. Army forces require continued development of the military working dog to expand sensory array increasing the canine's ability to detect additional threats, hazards, and other materials. Future maneuver support requires artificial sensor capabilities to expand the range of detectable scents, and employ a more feasible and efficient capability.

(5) Forensics. Maneuver support forces require improvements in forensics science to enhance accuracy, reliability, precision, timeliness, durability, mobility, and portability. The capability

must be deployable to all operating environments and integrate across all domains to exploit forensics evidence across the ROMO.

(6) CBRN reconnaissance and surveillance.

(a) Mitigate hazards. Army forces require the ability to engage a WMD to prevent the use, stop the transport of WMDs, detect subsurface CBRN use, decontaminate large numbers of contaminated personnel and equipment, and assess the extent of CBRN contamination.

(b) Detect hazards. The future force must detect at standoff distances, identify, and diagnose future threats and hazards, predict, and provide WMD threat reporting and warning on CBRN hazards to reduce casualties and preserve operational objectives. Future systems will investigate suspected areas and materials at standoff through advanced techniques and state of the art cross-domain sensors. All sensor data integrates into a common operating environment. Actual hazards will activate timely warning to prevent and reduce casualties to friendly forces and other operational actors.

(c) Recover from hazards. Maneuver support requires the ability to recover from CBRN material; disabling it so it cannot act as intended. This includes advanced counter measures to keep personnel safe from exposure to known hazards, and disable the hazards to prevent personnel operating in the vicinity from becoming casualties. Future systems must be expeditionary to meet joint and Army worldwide objectives for WMD elimination.

(7) Terrain and infrastructure assessments. Maneuver support forces require advanced tools and technologies to support multiple distributed penetration points and landing zones in an austere anti-access and area-denied environment. This includes technologies for remote assessment of facilities, long-range (over the horizon) communication capabilities, rapid construction capabilities, and assessment tools for survivability to support austere entry. Remote assessment identifies potential sites used for friendly force entry, assesses facilities usability for supporting air and sea platforms and delivered equipment, and identifies construction requirements to improve facilities supporting austere entry during follow-on operations.

(8) Contingency basing. The future force must establish, expand, and secure contingency basing to protect Soldiers and partners against threats and hazards. This includes identifying and resolving any threats posed to personnel living and operating on base camps including disorder, crime, and indiscipline, and improving quality of life conditions while operating in austere environments for long periods.

(9) Terrain shaping.

(a) Countermobility. Future countermobility systems must be variable form fit to support multiple missions, support a variety types of munitions, and allow integration with other lethal and nonlethal countermobility systems. Future munitions must be man in the loop remote operated, and have networked sensors interoperable with other Army and joint mission command systems. It must develop to support multiple methods of employment, such as vehicle, artillery, rocket, unmanned systems, Army aviation, and joint fixed wing aircraft. Countermobility systems should

communicate sensor and control data, and sensors should be capable of supporting other missions as needed. All countermobility should be hardened against cyberspace or electronic warfare attack, and the enemy's ability to take control of remotely operated systems. Maneuver support forces will mark, record, and report obstacles interoperable with mission command systems.

(b) Mobility. Future maneuver support forces must have the lethality and survivability necessary to win the close fight, and the protection to endure the effects of multiple protracted engagements. All firepower, mobility, and mission command capabilities must be commensurate with the supported BCT. Future robotic and autonomous systems will enable clearing of obstacles, emplacing gap crossing, constructing and maintaining combat roads and trails through remotely operated, follow-leader, semi-autonomously, and manned and unmanned teaming techniques in order to remove Soldiers from dangerous conditions.

(c) Camouflage, cover, and deception. Maneuver support forces employ obscuration to support multiple missions to conceal and cover activities. Future obscuration requirements prevent the enemy from monitoring and tracking force movements and site occupation. The future force relies on obscuration to counter enemy targeting and acquisition, and advanced weapon systems employment to protect the force, populations, resources, and activities.

(10) Counter explosive hazards. Future maneuver support forces require advanced capabilities to detect, identify, and render safe, and neutralize explosive hazards (improvised explosive device, unexploded ordnance, mines) along routes and across areas to protect the force and assure mobility. Identifying information and warnings will integrate into a common operating environment.

(11) Robotics and autonomous systems. Maneuver support forces employ robotics and autonomous systems to enhance situation understanding, increase capacity of the force, and protect the force by replacing Soldiers in dangerous situations. Maneuver support forces require advanced robotics and autonomous systems capabilities that interoperate seamlessly, incorporate common modular hardware, reduce operational power and maintenance requirements, provide smaller platforms, and hardened against cyberspace and electronic attack, preventing the enemy from taking control of any robotics or autonomous system. On board processing power must improve to support near-real-time sensing and reporting, standoff detection of CBRN and explosive hazards, and mapping of subterranean facilities. Maneuver support forces require employing robotics and autonomous systems through manned and unmanned team techniques.

(12) Individual protection systems. Maneuver support forces require scalable protection systems to protect the individual Soldier, and reduce the weight burden and performance degradation caused by environmental effects. The future force incorporates new technologies and materials (including breathing technology) that are low cost and require minimal power. Advancements in medical countermeasures provide additional protection to the Soldier and may reduce the need for some protective gear.

d. Far-term (2030-2040). The following science and technology areas consist of initial ideas to enable the Army beyond 2025. These broad ideas address maneuver support requirements in a complex environment against adaptive adversaries. These objectives lead to innovative changes

in the way maneuver support organizations are trained, manned, and equipped, resource personnel, and develop and field capabilities. Many of the ideas generated from experimentation and learning leads to comprehensive capabilities enabling the Army to gain or maintain overmatch in many areas, and develop efficient, dynamic, and expeditionary solutions.

(1) AD. AD is any cross-domain capability which denies or degrades the enemy's ability to maneuver along, access, and occupy critical areas. Maneuver support forces require emerging technology to restrict occupation throughout an area of operations.

(2) Austere entry operations. The future Army will need to insert forces composed of manned and unmanned teams into hostile, uncertain, or permissive environments, and then sustain and protect those forces. The Army will assess, prepare, and provide multiple entry points for operationally significant forces to conduct future missions rapidly.

(3) Signature management. Future technology requires reduction in an adversary's ability to detect, classify, recognize, identify, or target protected persons, platforms, or infrastructure in any sensory modality. Future requirements allow friendly forces to blend in with their surroundings. Signature management occurs through concealment or camouflage.

(4) Ubiquitous sensing. Ubiquitous sensing provides commanders with near-real time understanding of the introduction or existence of an obstacle or hazard throughout the area of operation. The future Army will require advanced ability to detect an obstacle or hazard, warn personnel to prevent loss or injury, maintain visibility of identified, threats, prioritize recovery of personnel, and mitigate impacted areas.

(5) Artificial intelligence. Artificial intelligence allows the future force to automate common, mundane, and redundant tasks for more efficient operations. The future force will rely on better data mining, organization, analysis, storage, synthesizing, and disseminating, and producing knowledge to inform decision makers better. Maneuver support forces will rely on artificial intelligence to conduct pattern recognition and predicative analysis, and fuse sensor data with other information to understand the operating environment better to warn and report, inform decision makers, and allocate scarce resources. Artificial intelligence includes cognitive automated systems analysis. Advances in cognitive analysis will include self-optimization, self-adaption, and replicating human intelligence. The future force will integrate sensors from all five domains and apply cognitive analysis to improve situational understanding, and decision making.

### **C-3. Conclusion**

This appendix provides prioritized science and technology objectives balanced across the near-, mid-, and far- terms to ensure the Army employs maneuver support capabilities to an agile, more expeditionary force to gain or retain overmatch against future adversaries. To maintain overmatch, the Army focuses on science and technology investments to deliver the right capabilities to meet future challenges. Investment strategies shift from current near-term requirements to providing technologies in the mid-term to gain and maintain overmatch, and to support innovation improving Army operations in the far-term. Science and technology decisions made today are critical to the Army beyond 2025.

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## **Appendix D**

### **Risks of Adopting this Concept**

#### **D-1. Risks from concept hierarchy**

The implementation risks stated in the higher concept hierarchy; Capstone Concept for Joint Operations, ACC, and AOC apply equally to this concept.

#### **D-2. Risks within the AFC-MS**

a. The AFC-MS identifies the following additional risks.

b. Maneuver support forces conduct a number of missions across all echelons. They require proper mission analysis and understanding to align the appropriate force at the point of need. Dispersed forces and semi-independent operations will tax the capacity of the maneuver support forces. Inadequate capacity to support missions dispersed over great distances may not allow ready forces in sufficient scale to respond and contribute to joint combined arms operations. Additionally, over 80 percent of maneuver support forces are in COMPO II and III.<sup>4</sup> This presents a unique challenge with readiness, training integration, and expeditionary response. Maneuver support units must maintain a high level of readiness and retain sufficient institutional capabilities to expand its force structure when required.

c. Maneuver support forces must assess their staff composition. Multi-domain battle will require more joint, interorganizational, and multinational partners at all echelons. Improved integration of special forces enablers, such as civil affairs, information operations, and psychological operations, enhances responsiveness, understanding, and support to missions throughout the conflict continuum.

d. The Army requires multifunctional Soldiers who retain expertise in their specialized and technical skills. However, this multifunctional capability could result in a loss of proficiency. The additional time necessary to train multiple skills must balance with a Soldier's core occupational skills. The Army must design multifunctional maneuver support organizations and units. Maneuver support battalion and brigade headquarters must be multifunctional and designed to provide the expertise required by the supported element. The lack of specialization and resourcing needed to implement multifunctional capabilities introduces risk to multifunctional and tailorable units.

e. Soldiers and leaders may become overwhelmed by information. Analysis takes time, but the future operating environment demands rapid solutions and situational understanding. Artificial intelligence, training, robust reach back mechanisms, and manned and unmanned teaming will mitigate this problem.

f. Reliance on technology means maneuver support forces need redundant capabilities and a self-healing and protected Army information network. Training and staff awareness will off-set the risk of operating within a degraded network environment.

g. Resource restraints to include manning and money will continue to impact the Army. The future requires investments in science, technology, recruiting, and total Army readiness. Improved mobility, fire power, protection, intelligence, mission command, and sustainment enables maneuver support forces to integrate when providing support. Maneuver support forces must maintain pace and communications with BCTs they support. A tiered system degrades interoperability, readiness, and expeditionary capabilities.

h. Robotics may replace functions or tasks that place Soldiers in extreme danger. The utility and cost-benefit assessments for applying robotic solutions must consider impacts to Soldier risk and Soldier workload to operate and maintain systems. The Army will use robotics for high-risk tasks such as, breaching, CBRN detection, and render-safe procedures. Using robotics could increase the demand for Soldiers to operate the robots. Resourcing and maintaining robotic systems increase the cost to the Army, but might not remove a Soldier from high-risk operations.

i. Maneuver support forces lack the organizational structure and experience to comprehend, influence, and assess the human perspective and host nation ideology, institutions and psychological dynamics to generate obstacles and opportunities within a contested environment.

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## Glossary

### Section I

#### Abbreviations

ACC	Army Capstone Concept
ACF	Army Concept Framework
AD	area denial
ADP	Army doctrinal publication
ADRP	Army doctrinal research publication
AFC-MS	Army Functional Concept-Maneuver Support
AOC	Army Operating Concept
ARCIC	Army Capabilities Integration Center
BCT	brigade combat team
CBRN	chemical, biological, radiological, nuclear
CWMD	combating weapons of mass destruction
DOD	Department of Defense
DSCA	defense support of civil authorities
FM	field manual
JP	joint publication
RC	required capability
ROMO	range of military operations
TP	TRADOC Pamphlet
TRADOC	U.S. Army Training and Doctrine Command
U.S.	United States
WMD	weapons of mass destruction

## **Section II**

### **Terms**

#### **activities**

Missions conducted to support military engagement, security cooperation, deterrence or crisis response and contingency operations. (JP 3-0)

#### **defense support of civil authorities**

Support provided by U.S. Federal military forces, DOD civilians, DOD contract personnel, DOD component assets, and National Guard forces in response to a request for assistance from civil authorities for domestic emergencies, law enforcement support, and other domestic activities, or from qualifying entities for special events.

#### **operational environment**

A composite of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander.

## **Section III**

### **Special terms**

#### **counter explosive hazards**

Detecting explosives and explosive components, mitigating explosives hazards effects, and preventing or neutralizing explosives hazards to protect personnel, equipment, facilities, and maintain mobility.

#### **cross-domain maneuver**

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.

#### **cross-domain movement corridor**

The employment of mutually supporting lethal and nonlethal capabilities of multiple domains to protect and enable ground movement along a route.

#### **integrate security operations**

Organize and employ capabilities at echelon in all domains to develop situational understanding continually, protect the force, and create a secure environment.

#### **maneuver support warfighting function**

The related tasks and systems that understand and shape the environment, mitigate the effects of obstacles and hazards, and protect the force, populations, resources, and activities to enable freedom of movement and action.

**operate semi-independently**

Possess sufficient mobility, firepower, protection, intelligence, mission command, and sustainment capabilities to conduct cross-domain maneuver at extended supporting range and distance for up to seven days while achieving operational objectives.

**populace control**

Providing security for indigenous people, mobilizes human resources, denies enemy access to the population, and detects and reduces enemy agent effectiveness.

**resource control**

Regulating the movement or consumption of material resources, mobilizes material resources, and denies materiel to the enemy.

**understanding**

Employing maneuver support technical information capabilities and leveraging the intelligence enterprise.

**WMD information**

Process of collecting, analyzing, and applying an assessment of an adversaries WMD-related science, materiel, and programs so that Army forces, operating with joint, interorganizational, and multinational partners, counter the spread of WMD-related materials and technologies.

**Endnotes**

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<sup>1</sup> JP 3-0.

<sup>2</sup> Cross domain maneuver is the task where by our forces will integrate and synchronize effects across two or more domains to develop windows of opportunity and to ensure freedom of movement and action across the battlefield.

<sup>3</sup> Threat is divided into three levels. Levels provide a general description and categorization of threat activities, identify the defense requirements to counter them, and establish a common reference for planning guidelines. See FM 3-39 for examples of threat for each level.

<sup>4</sup> Total Army Analysis 19-23.