

Army Modernization Strategy: Investing in the Future

The Army Modernization Strategy (AMS) describes how the Total Army – Regular Army, National Guard, Army Reserve, and Army Civilians – will transform into a multi-domain force by 2035, meet its enduring responsibility as part of the Joint Force to provide for the defense of the United States, and retain its position as the globally dominant land power. The 2018 U.S. Army Modernization Strategy Report to Congress introduced the Army’s six materiel modernization priorities to make Soldiers and units more lethal to deploy, fight, and win our Nation’s wars. This 2019 AMS expands the Army’s approach beyond those six priorities, outlining a more holistic approach to modernization while maintaining continuity of priorities. Modernization is a continuous process requiring collaboration across the entire Army. Therefore, while this AMS outlines an end state for the future Army in 2035, Army modernization will remain ongoing as we must continue to test and refine operating concepts, draw on emerging technologies, and anticipate changes in the operating environment.

Army Modernization Framework ~ The primary end state of the 2019 AMS, nested with the 2018 Army Strategy, is a modernized Army capable of conducting Multi-Domain Operations (MDO) as part of an integrated Joint Force in a single theater by 2028, and ready to conduct MDO across an array of scenarios in multiple theaters by 2035. The MDO concept describes how the Army will support the Joint Force in the rapid and continuous integration of all domains of warfare – land, sea, air, space, and cyberspace – to deter and prevail as we compete short of conflict, and fight and win if deterrence fails.

To achieve this end state by 2035, the Army will modernize how we fight, what we fight with, and who we are. This approach integrates the elements of doctrine, organizations, training, materiel, leader development and education, personnel, facilities, and policy (DOTMLPF-P) within the Army, with other Joint Force elements, and alongside allies and partners. How we fight is the realm of concepts, doctrine, organizations, and training. What we fight with is characterized by materiel development and procurement, guided by the Army’s six materiel modernization priorities. Who we are encompasses leader development, education, and 21st century talent management. Modernizing across each effort in a synchronized way will ensure the Army has well-trained Soldiers, organized into effective warfighting formations with modern weapon systems and sufficient capacity to win in any conflict, on any battlefield, anywhere in the world. These elements are interdependent and require corresponding updates to global force posture, facilities, and policies to ensure the Army’s modernization efforts remain synchronized over time and with the rest of the Joint Force.

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U.S. Army (USA)

Stakeholder(s):

Total Army :

Regular Army, National Guard, Army Reserve, and Army Civilians

Army Futures Command (AFC) :

Modernization is a continuous process requiring collaboration across the entire Army, and Army Futures Command brings unity of effort to the Army's modernization approach. AFC, under the strategic direction of Headquarters, Department of the Army (HQDA), develops and delivers future concepts, requirements, and organizational designs based on its assessment of the future operating environment. AFC works closely with the Army's modernization stakeholders to integrate and synchronize these solutions into the operational force across the DOTMLPF-P. In addition to AFC, key Army stakeholders of the modernization enterprise include:

Headquarters, Department of the Army (HQDA) :

Headquarters, Department of the Army (HQDA), provides strategic guidance and direction, develops Army policies, prioritizes resources, and sets the strategic direction for the Army.

Assistant Secretary of the Army for Acquisitions, Logistics, and Technology :

Assistant Secretary of the Army for Acquisitions, Logistics, and Technology, working closely with AFC, leads Army acquisition efforts.

Training and Doctrine Command :

Training and Doctrine Command, with its functional Centers of Excellence, is the lead for doctrine development, organizational updates, training, leader development and education, and acquiring and developing people.

Army Materiel Command :

Army Materiel Command, newly reorganized to include Installations Management Command, will execute the modernization of facilities – the Army's power projection platforms – to meet requirements for training, sustaining, projecting, and maintaining the future force.

Forces Command :

Forces Command plays a key role as the service force provider by enabling the Army to test, experiment, and draw on the insights of the operational force, while balancing readiness requirements for current operations and contingencies.

Vision

A modernized Army capable of conducting Multi-Domain Operations (MDO) as part of an integrated Joint Force in a single theater by 2028, and ready to conduct MDO across an array of scenarios in multiple theaters by 2035.

Mission

To transform Total Army into a multi-domain force

1. Doctrine, Organization & Training

Continuously update doctrine, organizational designs, and training to conduct operations as a multi-domain force

How We Fight ~ The Army will continuously update its doctrine, organizational designs, and training to conduct operations as a multi-domain force. The Army will continue to validate the MDO concept, and refine it as necessary. The Army will pursue every opportunity to rapidly integrate MDO into our evolving doctrine. Additionally, the use of experimentation, war gaming, and analysis will inform the organizational design, materiel solutions, and training requirements for the MDO ready force. Units will train for MDO using the new Synthetic Training Environment capabilities at home station, and redesigned combat training centers will enable the collective training of units at echelon to conduct MDO.

1.1. Multi-Domain Operations

Compete below the threshold of armed conflict, penetrate and exploit windows of opportunity to break through enemy standoff capabilities, and then return to competition on favorable terms

Near-peer competitors such as China and Russia seek to achieve their aims by using multiple layers of stand-off across all domains – land, sea, air, space, and cyberspace – to separate U.S. forces and our allies in time, geography, and function. They hope to deny our ability to project combat power, thereby creating de facto spheres of influence. Our competitors will do this through a combination of long-, mid-, and short-range weapons systems, conventional forces, integrated air defenses, electronic warfare and jamming, cyber-attacks, and denial of space-based capabilities, such as reconnaissance, navigation, and communications, as well as an array of political and informational tools.

To solve the problem of layered stand-off, the MDO concept describes how a strategically-postured Army, operating as part of the Joint Force, will compete below the threshold of armed conflict, penetrate and exploit windows of opportunity to break through enemy standoff capabilities, and then return to competition on favorable terms. The MDO concept defines three tenets of multi-domain operations. The first tenet is “calibrated force posture” – a combination of forward presence, expeditionary capability, and access to joint, national, and partner capabilities. The second tenet is the use of “multi-domain formations” that have the capacity, capability, and endurance to maneuver and choreograph effects across multiple domains. The final tenet is “convergence” – the ability to rapidly converge effects from multiple domains, simultaneously and nearly continuously, using multiple forms of attack and redundant sensor-to-shooter networks enabled by robust mission command. An MDO capable force will allow the Army, as part of an integrated Joint Force, to expand the options available to civilian authorities, to include effective deterrence and competition short of armed conflict, or timely response to an attack attempting to permanently change the status quo.

1.2. Multi-Domain Formations

Provide a full range of capabilities to enable the Joint Force commander’s ability to deter, compete, and if required quickly transition to armed conflict

The Army must provide a full range of capabilities to enable the Joint Force commander’s ability to deter, compete, and if required quickly transition to armed conflict. Additionally, the Army must have enough expeditionary capacity available to provide follow-on forces to reinforce the theater if needed. These capabilities are collectively referred to as a “force package.”

In the MDO capable force of 2028, force packages will consist of modernized formations that are strategically positioned and able to leverage national-level capabilities and authorities. The MDO capable force will combine tailorable formations of networked manned and unmanned platforms, fires, electronic warfare, cyber, intelli-

gence, surveillance, reconnaissance, engineers, sustainment, communications, and protection capabilities at all echelons, from squad to theater.

The Army will build, employ, and refine the capabilities in the MDO force packages over time, based on continuous assessments of the strategic environment. This development will be driven by continuous operational testing and analysis – such as ongoing experiments with MultiDomain Task Forces in both the European and Indo-Pacific theaters, regular war gaming and experimentation, and rapid and iterative capability assessments with units deployed and in the field. The Army will use the lessons learned from this experimentation to refine the design of future multi-domain formations.

2. Modernization

Drive materiel development for the MDO capable force

Stakeholder(s)

Army Futures Command :

Army Futures Command's CFTs enable the modernization priorities. CFTs bring together the major stakeholders – requirements, acquisition, science and technology, testing, and logistics – to work together to develop requirements in support of MDO in a timely manner. Early prototyping, testing, and touch points with Soldiers from the operational force help ensure that the solutions generated are the right ones. The eight CFTs align with the Army's six modernization priorities, plus two enabling areas – assured positioning, navigation, and timing and the synthetic training environment. As a component of a persistently modernizing Army, CFTs will adjust as technology advances and our competitors adapt. In addition, Army forces will require incremental modernization of current programs in order to field an MDO ready force. As CFT programs are fielded, some current systems will be upgraded to provide complementary overmatch capabilities.

Assured Positioning, Navigation, and Timing

Team :

Enabling Area

- Assured Position, Navigation, and Timing
- Tactical Space
- Navigation Warfare

Synthetic Training Environment Team :

Enabling Area

- Synthetic Training Environment Information System
- Reconfigurable Virtual Collective Trainers
- Squad Immersive Virtual Trainer
- Squad/Soldier Virtual Trainers
- One World Terrain

What We Fight With ~ The Army's six modernization priorities will drive materiel development for the MDO capable force. The whole is greater than the sum of the parts – it is the combination of these capabilities that will allow the Army to fight MDO...

The Army may not succeed on the first demonstration and experimentation for every system, but we will learn and rapidly adjust programs and concepts. Key to developing the technologies necessary to meet our modernization goals is encouraging a culture of innovation within the Army, and forging new partnerships with traditional and non-traditional industries, academia, and other partners. We will use adaptive acquisition approaches that leverage the full scope of Congressional authorities, such as Middle Tier Acquisition, to accelerate development, production, and delivery of materiel capabilities. We will also use innovative contracting tools, such as Other Transaction Authorities and Cooperative Research and Development Agreements, to foster innovation and encourage American small and medium enterprises to help meet current and future needs of our Soldiers. We will employ a deliberate and balanced approach to intellectual property (IP) that will make us more sophisticated customers, enabling us to access creative technologies emerging from the private sector while still protecting IP.

In addition to shifting the way the Army approaches acquisition, we will also fundamentally change the way we develop materiel capability. Advanced manufacturing methods and materials will be incorporated into system design, development, production, and sustainment. Adoption of these advanced technologies throughout a system's lifecycle will allow us to quickly develop the next generation of weapons systems and maintain overmatch against near-peer adversaries.

Finally, investing in digital transformation and the modernization of the Army's underlying network and computer infrastructure is essential to our success. Specifically, the Cloud is the foundation for this entire modernization effort. The Army will develop cloud computing technologies, improve data access and sharing environments, and streamline software development tools and services. Together, these technology investments will allow the Army to take advantage of emerging machine learning and AI technologies to understand, visualize, decide, and direct faster than our competitors. By leveraging the Cloud open-architecture, information can flow rapidly between the enterprise and Soldiers on the ground. This will enable commanders to counter adversaries in the information environment as effectively as they do in physical domains and win in the cognitive space.

2.1. A2/AD Capabilities

Penetrate and neutralize enemy A2/AD capabilities

Long range precision fires enable multi-domain forces to penetrate and neutralize enemy A2/AD capabilities while ensuring military overmatch at every echelon.

Stakeholder(s):

Long Range Precision Fires Team :

- *Strategic Fires*
- *Extended Range Cannon Artillery*
- *Precision Strike Missile*

2.2. Vehicles

Increase the firepower, speed, and survivability of land forces

Next generation combat vehicles increase the firepower, speed, and survivability of land forces, allowing them to maneuver into superior positions on the battlefield and pair with robotic vehicles.

Stakeholder(s):

Next Generation Combat Vehicle Team :

- *Optionally Manned Fighting Vehicle*
- *Mobile Protected Firepower*
- *Robotic Combat Vehicle*
- *Armored Multi-Purpose Vehicle*

2.3. Aircraft

Increase the maneuverability, endurance, lethality, and survivability of Army aircraft

Future vertical lift platforms and technologies increase the maneuverability, endurance, lethality, and survivability of Army aircraft – increasing their operational reach and effectiveness against near-peer competitors.

Stakeholder(s):

Future Vertical Lift Team :

- *Future Attack Reconnaissance Aircraft*
- *Future UAS*
- *Future Long Range Assault Aircraft*
- *Modular Open Systems Architecture*

2.4. Network Technologies

Modernize Army network technologies

The modernization of Army network technologies is necessary to command and control forces distributed across vast terrain, converge effects from multiple domains, and maintain a common situational understanding in MDO.

Stakeholder(s):

Network Team :

- *Unified Network*
- *Joint Interoperability/Coalition Accessible*
- *Command Post Common Environment*
- *Command Post Mobility/Survivability*

2.5. Air & Missile Defense

Modernize air and missile defense capabilities

Our competitors have invested heavily in their indirect fire and missile capabilities necessitating the modernization of our air and missile defense capabilities. New technologies will defend ground forces against

adversary air threats, and will also defend ours and our allies and partners' infrastructure against a host of air and missile threats.

Stakeholder(s):

Air and Missile Defense Team :

- *Army Integrated Air and Missile Defense*
- *Lower – Tier Air and Missile Defense Sensor*
- *Maneuver – Short Range Air Defense*
- *Indirect Fire Protection Capability*

2.6. Lethality

Modernize Soldier lethality

Finally, efforts modernizing Soldier lethality will increase the capability of individual Soldier weapons, provide Soldiers with enhanced night vision, and increase their ability to quickly understand and react to emerging situations – increasing their lethality, precision, and survivability. These efforts will be complementary to ongoing Soldier performance initiatives to improve fitness, nutrition, and resiliency, to ensure we are modernizing the Soldier, not just the equipment for our Soldiers.

Stakeholder(s):

Soldiers

Soldier Lethality Team :

- *Next Gen Squad Weapon – Automatic Rifle*
- *Enhanced Night Vision Goggle – Binocular*
- *Integrated Visual Augmentation System*
- *Next Gen Squad Weapon – Rifle*

3. Capabilities & Training

Rely upon capable and highly trained Soldiers

Stakeholder(s)

Soldiers

Who We Are ~ The Army has always relied upon capable and highly trained Soldiers. The complexities of emerging technologies and the global security environment, and the sophistication of our MDO concept, make that reliance all the greater.

3.1. Leader Development

Update leader development and education processes

As more fully articulated in the 2019 Army People Strategy, the Army will update its leader development and education processes to increase critical, creative, and systems thinking so that the next generations of Army leaders are prepared for the complexities of MDO.

Stakeholder(s):

Leaders

3.2. Personnel Systems

Transform our personnel systems to maximize individual knowledge, skills, behaviors, and preferences

We will use talent management principles to transform our personnel systems to maximize individual knowledge, skills, behaviors, and preferences that help our Soldiers and Civilians reach their full potential.

3.3. Talent

Explore more flexible talent management approaches and opportunities

Additionally, we will continue to explore more flexible talent management approaches and opportunities that ensure the Total Army has the talent it needs for the future environment.

3.4. Performance Metrics

Use performance metrics to evaluate how modernization efforts are improving lethality

Finally, the new Squad Performance Model will use performance metrics to evaluate how modernization efforts are improving lethality at the Soldier level.

Stakeholder(s):

Squads

Soldiers

3.5. Alliances & Partnerships

Fight as a member of the Joint Force alongside allies and partners

The Army will always fight as a member of the Joint Force alongside allies and partners. Partnerships are key to great power competition, and our nation's allies and partners give us an important asymmetric advantage. The knowledge that we are prepared to fight together, and that we are willing to do so when needed, is a powerful deterrent to potential adversaries.

Stakeholder(s):

Joint Force

Partners

Allies

3.6. Concepts & Capabilities

Develop concepts and capabilities with our allies and partners

As part of our modernization effort, we will seek opportunities to develop concepts and capabilities with our allies and partners.

Stakeholder(s):

Allies

Partners

3.7. Interoperability

Strengthen technical, human, and procedural interoperability

We will strengthen not only technical interoperability, but also human and procedural interoperability, to ensure that we can fight as one team.

3.8. Exercises, Training & Exchanges

Use exercises, training opportunities, and leader exchanges to strengthen that interoperability

We will use exercises, training opportunities, and leader exchanges to strengthen that interoperability, and to refine our approaches to MDO as a Joint and combined force.

4. Enablers

Address critical enablers

4.1. Force Posture

Determine the calibrated force posture it needs for MDO

By 2022, the Army will determine the calibrated force posture it needs for MDO – the combination of forward presence, expeditionary capacity, and access to national level assets. Strategic force posturing will be accompanied by the delegation and synchronization of those authorities necessary to conduct MDO.

4.2. Installations & Facilities

Modernize installations and facilities to support new technologies and materiel

The Army will also modernize its installations and facilities to support new technologies and materiel that enable MDO, and will develop more efficient, effective, and resilient systems to support how we mobilize, protect, project, and sustain expeditionary forces from home station. Army Prepositioned Stocks mutually support modernization and expeditionary capability to provide strategic flexibility for MDO. Furthermore our installations and organic industrial base will modernize to support readiness, mobilization, and surge requirements for conflict, and to support the equipment developed by the CFTs and fielded to the Total Army.

4.3. Policies & Authorities

Continually reassess policies and authorities across three broad areas: access, surveillance, and employment

Additionally, MDO requires an ongoing reassessment of existing policies and authorities across three broad areas: access, surveillance, and employment. Army forces require access to military and civilian networks that enable surveillance, deception, and protection operations in competition and armed conflict. If competition escalates into armed conflict, Army forces must have the ability to rapidly employ capabilities such as electronic attack, offensive cyberspace and space, and lethal strike.

4.4. Research

Conduct transformative research

Finally, the Army conducts relevant, transformative research rooted in the tenets of discovery, innovation, and transition to deliver science and technology (S&T) solutions. Army S&T maintains focused investments in basic and applied research. The Army will execute an investment strategy that delivers underpinning knowledge and technology which addresses the elements of force modernization...

Army Priority Research Areas [include the following]

Stakeholder(s):

Army Laboratories :

To support this effort, the Army is aligning its laboratories to priority modernization efforts and developing external partnership agreements.

Texas A&M University :

For example, AFC has cooperative agreements with Texas A&M University for hypersonics, University of Texas-Austin for robotics, and ...

Carnegie Mellon University :

Carnegie Mellon University for artificial intelligence.

Army S&T :

Army S&T will continue to have a heavy emphasis on mid- and far-term capabilities, through threat based, concept driven and capability informed work.

4.4.1. Disruptive Energetics

Greater than 2x energetic energy over smaller footprints.

4.4.2. RF Electronic Materials

Taking advantage of optical and thermal properties of diamond materials for directed energy.

4.4.3. Quantum

Optimized information transfer, sensing, and communication with unparalleled security.

4.4.4. Hypersonic Flight

Aerodynamics, materials, and processes.

4.4.5. Artificial Intelligence

Increasing speed and agility in which we respond to emerging threats.

4.4.6. Autonomy

Maneuverability and off-road mobility of platforms.

4.4.7. Synthetic Biology

Reactive and responsive skins/spectrally selective materials/antimateriel properties.

4.4.8. Material by Design

Protection overmatch against future threats.

4.4.9. Science of Additive Manufacturing

For next generation munitions for increased range and lethality.

Administrative Information

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