

# **ARMY EQUIPMENT PROGRAM**

*in support of*  
**PRESIDENT'S BUDGET 2017**

FEBRUARY 2016

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**February 2016**

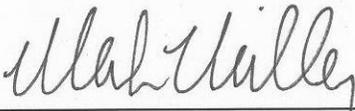
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## Foreword

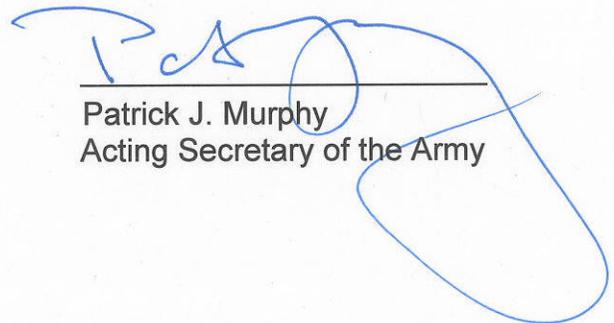
The United States Army remains the foundation of the Joint Force, existing to fight, win wars, and defend the Nation. Today the Total Army remains committed on six continents simultaneously fighting, deterring aggression, and reassuring allies and partners. Despite increasing instability around the world, the Army's modernization budget has been reduced annually since Fiscal Year (FY) 2011 due to fiscal constraints. Overall, today's dynamic fiscal and operational environments require a flexible and balanced plan for the Army to equip a smaller force without sacrificing its decisive edge.

The Army has to balance people, readiness, and modernization. In 2017 readiness is the Army's number one priority while assuming risk in modernization. The priorities and objectives to ensure readiness are threefold: to ***Prepare for Joint Combined Arms Maneuver*** by providing tailorable and scalable forces, with increased efficiency, lethality, and mobility, while reducing logistics demand; to ***Enable Mission Command*** by investing in agile and expeditionary command posts, ensuring interoperability at all echelons and reliable cyber security; and to ***Enhance the Soldier for Broad Joint Mission Support*** by improving lethality, protection, and situational awareness.

This plan describes how the Army's equipment program ensures Soldiers and formations maintain a decisive edge over all potential adversaries. The President's Budget request for 2017 prioritizes our modernization in **Aviation, the Network, Integrated Air and Missile Defense, Combat Vehicles, and Emerging Threats** that focus our Science and Technology investments. These priorities allow the Army to be equipped to win in a complex world against evolving threats under widely varied conditions and geographies. Continuous cuts in modernization programs threaten our overmatch against potential adversaries, while increasing future costs to regain or maintain parity. Predictable and consistent funding is required to modernize, meet the evolving threat, and fully execute all elements of defense strategic guidance.



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



Patrick J. Murphy  
Acting Secretary of the Army

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## ***Army Equipment Program Overview***

*“Combat readiness is our number one priority. And there is no other number one.” General (GEN) Mark Milley, Chief of Staff, Army (CSA)*

The Army Equipment Program in support of the President's Budget 2017 (AEP PB 17) describes the Army Research, Development, & Acquisition (RDA) budget for key capability portfolio areas and the Science and Technology (S&T) portion of the Fiscal Year (FY) 2017 President's Budget request. This document provides an overview of RDA investments in 12 capability portfolio areas, highlights strategy changes from the FY 2016 budget, and defines key investment objectives for FY 2017.

The Army equipment modernization objective remains unchanged for FY 2017 – maintaining technological overmatch in our combat formations to deter and defeat potential adversaries. Near-term capability gaps will be mostly mitigated through incremental improvements to existing platforms and systems, while we make prudent investments in emerging and breakthrough technologies to address future gaps.

The Army incorporates a five-tier framework to guide equipment modernization efforts consisting of:

- I. Protect
- II. Invest
- III. Modernize
- IV. Sustain
- V. Divest

**I. Protect.** Protecting S&T investments is key to ensuring the next generation of breakthrough technologies can be rapidly applied to existing or new equipment designs. To this end, the Army has continued to maintain S&T funding even with reductions in RDA.

**II. Invest.** The Army continues iterative reviews of capability gaps to ensure proper alignment of limited resources with mission requirements and Army priorities. In some instances, the Army either delayed or discontinued the development of new systems due to significantly decreased operational value, capability shortcomings, and resource constraints. For example, last year's Army plan for new system procurement did not transition modernization programs for the Ground Combat Vehicle and Armed Aerial Scout to programs of record. Moving forward, new system development and acquisition will continue to be tempered by fiscal realities and focused on our highest priorities.

**III. Modernize.** In today's fiscally constrained environment, it is neither practical nor affordable to replace all aging equipment with new systems. Therefore, the Army must incrementally modify or modernize existing systems to extend service

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life while maintaining tactical advantages at each echelon. Additionally, the continuous improvement of existing systems directly contributes to sustaining the industrial base and organic engineering skills.

**IV. Sustain.** Returning Army equipment to the required level of combat capability remains central to regenerating and maintaining near-term readiness. The Army will require supplemental funding for a period of three years following the cessation of current operations to reset equipment and reestablish requisite readiness levels.

**V. Divest.** The Army divestment process seeks to identify equipment and systems that are excess or obsolete across the Total Army to reduce and eliminate the associated sustainment costs. To address this issue, the Army Requirements Oversight Council reviews Army-wide divestiture lists to determine and issue disposition guidance.

The Army will continue to manage risks associated with our equipment program by pursuing a strategy that achieves the best and most affordable balance between modernization, readiness, and manpower. In an increasingly complex global security environment with greater demand for Army capabilities, we will remain focused on maintaining tactical overmatch by prioritizing the equipment we are developing, modernizing, and procuring based on our most urgent capability gaps.

## ***Army Fiscal Year 2017 Budget Objectives and Priority Capability Areas***

*"The greatest sin that I can commit is for me to send Soldiers into harm's way that are not ready." GEN Mark Milley, CSA*

The *Army Operating Concept* and the Force 2025 and Beyond efforts match solutions to the Army Warfighting Challenges with available resources to continue to provide Soldiers with the best available equipment. The Army continues to focus on the effective use of limited resources to meet near-term requirements. The Army is tailoring investments to maintain balance, interoperability, scalable and agile formations, versatility, and innovation.

The Army continues to remain focused on meeting current demands, and has established overarching equipment budget priorities and objectives to guide investment strategies, as described below.

### Equipment Budget Priorities and Objectives:

- **Prepare for Joint Combined Arms Maneuver** to increase deployability, lethality and mobility, while optimizing protection as part of our Joint Force.
- **Enable Mission Command** to facilitate decision-making with agile and expeditionary tactical command posts supported by a robust home station architecture, reliable cyber security, and connectivity with our Joint Force partners.
- **Enhance the Soldier for Broad Joint Mission Support** to empower and enable squads with improved lethality, protection, and situational awareness.

The Army will not have the resources to equip and sustain the entire force with the most modern equipment until well after we are able to achieve balance between readiness, modernization, and force structure. Informed by the Army Warfighting experiments, the Army will selectively modernize, invest in programs with the highest operational return, and build new only by exception. We will delay procurement of our next generation platforms until they are technologically feasible and affordable, while managing risk in the near-term. In that light, the Army Modernization Strategy focuses on the five priority capability areas of Aviation, the Network, Integrated Air Missile Defense (IAMD), Combat Vehicles, and Emerging Threats.

The Army will continue to invest in **Aviation** to sustain fleet modernization and target other investments to close key capability gaps in survivability and lethality. The Army will seek ways within our means to mitigate an emerging window of vulnerability, brought about by rapidly evolving threats and

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increasingly complex operational environments. To prepare the foundation for Future Vertical Lift (FVL), we will resource, develop, and field the right advanced technologies to both increase current platform capabilities and transition to FVL platforms in the far-term.

The Army must maintain a **Network** that is expeditionary, survivable, protected against cyber threats, and enables uninterrupted mission command. Key investments supporting the network are Warfighter Information Network-Tactical (WIN-T), Assured Position, Navigation, and Timing (A-PNT), communications security (COMSEC), defensive and offensive cyberspace operations, and cyber situational awareness.

The Army will invest in **Integrated Air Missile Defense** capabilities to enable the defeat of a large portfolio of threats, ranging from micro unmanned aerial vehicles and mortars, to cruise missiles, and to sophisticated short and medium range ballistic missiles. The Army will support this priority by investing in an Integrated Air and Missile Defense (AMD) Battle Command System (IBCS), an Indirect Fire Protection Capability (IFPC), and lower tier Air and Missile Defense sensor capability improvements.

Army improvements to **Combat Vehicles** will ensure future Army maneuver forces retain the capability to overmatch the enemy with increased mobility, protection and lethality in the conduct of expeditionary maneuver, air-ground reconnaissance, and joint combined arms maneuver and wide area security. Specifically, the Army will invest in the Ground Mobility Vehicle (GMV), Stryker lethality upgrades, Mobile Protected Firepower (MPF), as well as an Armored Multi-Purpose Vehicle (AMPV).

Finally, Army Science and Technology investments will address **Emerging Threats** focused on our highest priority capability gaps to gain or regain overmatch and win decisively over any potential adversary. To this end, the Army will invest in innovative technologies focused on active protection systems (both ground and air), advanced/hybrid armor technologies, aircraft survivability, future vertical lift, long range precision fires, directed energy weapons, cyber, integrated electronic warfare, and robotics and autonomous systems (RAS).

The 12 equipment portfolio overviews in this document detail where we have applied our resources for FY 2017. Each portfolio balances risk against funding, schedule, and capability to provide Soldiers and units with the most critical battlefield systems.

## ***Soldier***

### **I. Portfolio Overview**

Lethal, protected, and situationally aware Soldiers and Squads are the centerpiece of all Army formations. They must be prepared to fight and win engagements with the enemy at close quarters in urban and complex terrain. When considering this portfolio, it is critical to view the Soldier as a system and take into consideration the Soldier's cognitive, physical, and social abilities. Capabilities are organized as common Soldier equipment, leader equipment, and mission specific equipment. Integrated solutions will balance weight, power, and cognitive load burdens within these sets and will be carefully synchronized with doctrine, organizations, training, and leader development. Soldier and Squad equipment and weapons include: individual and crew-served weapons, shoulder-fired and vehicle-mounted close combat missiles, mortars, Soldier sensors and lasers, night vision devices, body armor, Soldier clothing, individual equipment, parachutes, tactical communications equipment, and unmanned ground systems.

Robotics and autonomous systems (RAS) are a sub-portfolio within the Soldier portfolio. RAS enables human-machine collaboration across all mission areas by extending the area and time over which a force can be effective. Robotics consists of ground robotics, autonomous systems, and small unit power that enables Army formations greater situational understanding, protection, mobility, and lethality.

### **II. Strategy Update**

Three factors help to focus the Soldier Systems portfolio strategy. First, readiness is the Army's number one priority. Second, the rifle squad risks losing overmatch over time, due to the proliferation of cheap commercially available technologies that are rapidly closing the gap between our capabilities and those of our adversaries. The availability of armor piercing munitions, night vision devices, and advanced body armor on the open market provide both near-peer and non-state adversaries with similar capabilities at the squad level. Third, we must acknowledge fiscal realities when equipping and sustaining the entire force with the most modern equipment. Every equipment decision must be both affordable within the overall budget and cost-effective in addressing the known capability gap.

Modernization priorities for the Soldier Systems portfolio are to identify affordable and cost effective solutions that increase lethality through counter defilade target engagement, rapid target acquisition technologies, and extended small arms engagement ranges; enhance situational awareness through access to the tactical network; next generation optics and night vision; reduce Soldier load and power consumption; and improve survivability through protection and blast mitigation. Improved optics and target location capabilities will help the

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squad observe enemy activity at greater distances, make contact with the enemy under favorable conditions, and gain an early advantage in battle. Soldiers' loads will be lightened to ensure greater agility and speed of action as squads conduct fire and maneuver to gain positions of advantage over the enemy.

For RAS, the Army will incorporate a common, modular, and open architecture approach to maintain affordability and interoperability across the formation. This sub-portfolio's priority is to increase situational awareness at the squad level, provide stand off from hazards, enable optionally manned vehicles within the heavy tactical wheeled vehicle fleet, and offload the dismounted Soldier's load. In the near-term, the portfolio will sustain several of the Army's non-standard robotics until they are replaced by enduring programs of record and enable efficient use of expeditionary power at the platoon, squad, and Soldier levels. In the midterm, the sub-portfolio will leverage advances in autonomy and machine intelligence to transition robot roles from tools to team members. Human-machine collaboration enables the Soldiers in the fight to communicate with and command the robot without manually controlling the robot's every move.

### **III. FY 2017 Key Investments**

To meet the readiness and modernization objectives for the Army, the Soldier Systems portfolio objectives for FY 2017 are:

- Complete and review a small arms caliber and configuration study to inform next generation small arms modernization decisions.
- Continue the fielding of Enhanced Night Vision Devices to deploying Special Operation Forces (SOF) and Brigade Combat Teams (BCT).
- Continue replacement of the conventional force parachute inventory with the Advanced Tactical Parachute System.
- Continue to improve Soldier/Squad mobility and load reduction efforts through research and development in body armor, weapons, and selected energy solutions to extend the dismounted Soldiers' range and endurance.
- Significantly improve the storage, generation, and management of tactical Soldier and Squad power with the Small Unit Power program.
- Provide the Fire Resistant Environmental Ensemble to aircrews to improve their protection and comfort.
- Continue incremental development and procurement of Soldier Protection Systems (hard/soft armor, head protection, eyewear etc.) to field the best equipment and keep pace with threat capabilities.
- Maintain the Tube-launched, Optically-tracked, Wire-guided (TOW) missile and Javelin missile industrial base, and develop the Lightweight Command Launch Unit to lighten Soldier's load.

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To meet the readiness and modernization objectives for the Army, the Robotics sub-portfolio objectives for FY 2017 are:

- Provide Common Robotic System-Individual (CRS-I), an individual-transportable joint common chassis robot with modular mission payloads for reconnaissance and protection. This robot transitions many of the small non-standard robots to one program of record. Additionally this program fields a common robotic controller for robots that operate at the battalion level and below.
- Deliver Man-Transportable Robotic System (MTRS) Increment 2, vehicle transportable robots used to interrogate suspected explosive hazards. This robot transitions medium-sized non-standard robots (~160 lbs.) into one program.
- Field M160 Light Flail, a remotely controlled six-ton robot that performs area clearance of antipersonnel mines and limited route clearance through the action of a rotating chain/hammer flail.
- Provide Small Unit Power, a suite of Soldier equipment that generates power at the platoon level, more efficiently stores and distributes electrical energy on the Soldier, and provides a means of harvesting energy from a variety of sources.
- Purchase and evaluate the Robotics Enhancement Program, small quantities of state-of-the-art commercial-off-the-shelf solutions to inform emerging RAS programs of record.

IV. Investment Strategy

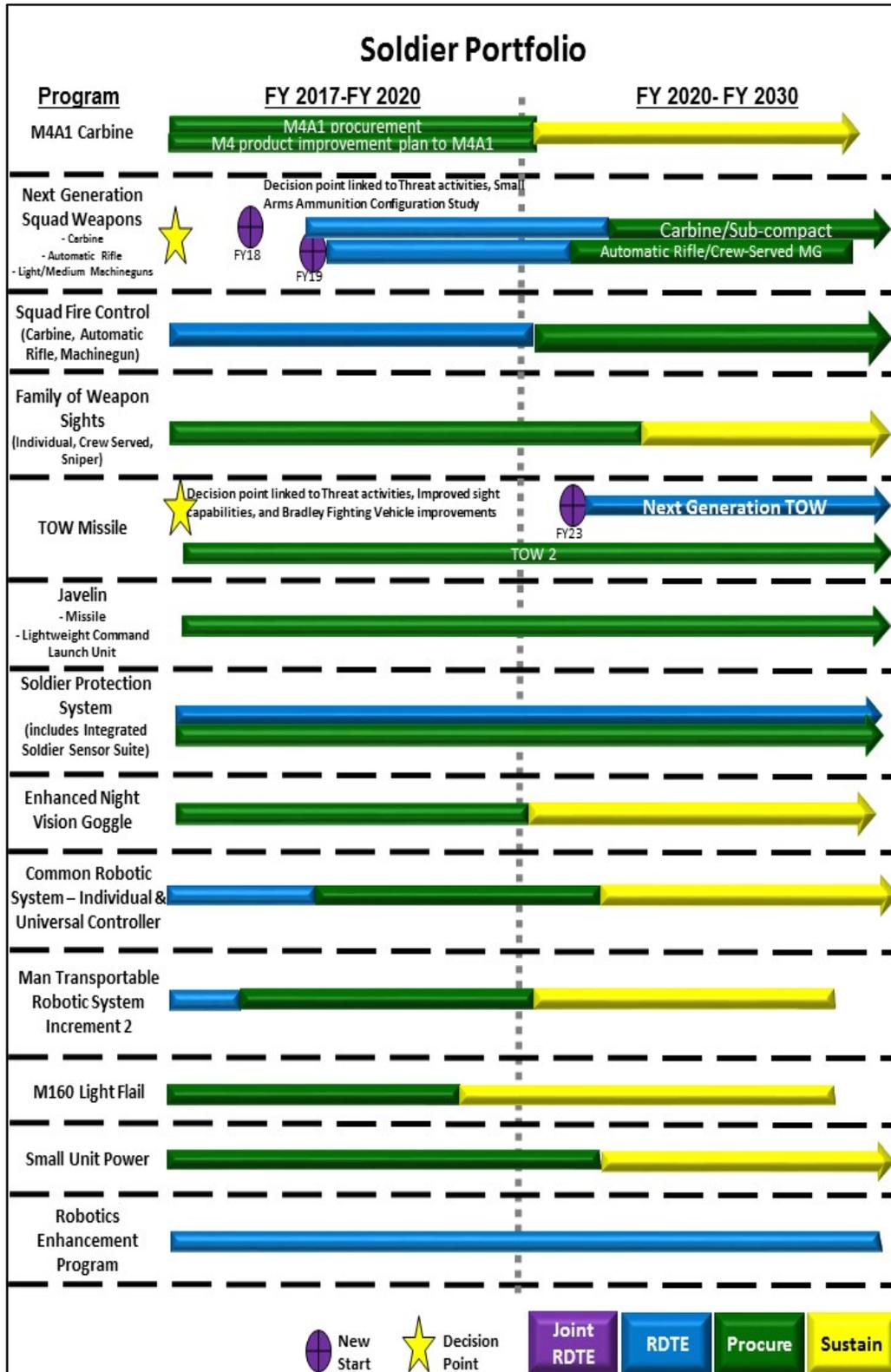


Figure 1. Soldier Investment Strategy

## ***Maneuver***

### **I. Portfolio Overview**

The Ground Maneuver Portfolio's goal is to develop and field an integrated combined arms team capable of overmatching enemies to seize, retain, and exploit the initiative. Key to this effort is the *Army Operating Concept* (AOC), which emphasizes the importance of ready land forces' for protecting our nation and securing our vital interests against determined, elusive, and increasingly capable enemies. While the concept underscores the foundational capabilities the Army needs to prevent wars and shape security environments, it also recognizes that to deter enemies, reassure allies, and win decisively the Army must conduct sophisticated expeditionary maneuver and joint combined arms operations. This requires a mix of wheeled and tracked combat vehicles that provide Army formations with unmatched lethality, mobility, and protection.

### **II. Strategy Update**

Expeditionary Maneuver requires the rapid deployment of task organized combined arms forces able to transition quickly and conduct operations of sufficient scale and ample duration to achieve strategic objectives. This requires forces with strategic mobility, as well as superior operational and tactical mobility, lethality, and protection.

While the Infantry Brigade Combat Team (IBCT) possesses the strategic mobility to conduct Expeditionary Maneuver, once deployed its operational and tactical mobility are limited to the foot speed of the Soldier. With no organic mobile, protected firepower capability, the IBCT cannot rapidly overcome enemy blocking positions, choke points, or strong points to continue offensive maneuver and rapidly seize objectives. The combination of limited operational and tactical mobility and lack of significant firepower hinder the IBCT's capability to transition quickly upon deployment to conduct combined arms maneuver operations against hybrid or high end threats with minimum friendly casualties.

Lethality is also a capability shortfall in our Stryker Brigade Combat Teams (SBCTs). While the platform addresses the mobility challenge we face in our IBCTs, the lack of a medium caliber weapon system hinders the SBCT's ability to conduct combined arms operations against hybrid or high end threats. Increasing the lethality of the Stryker vehicle and providing an improved mobile protected firepower platform gives the SBCT the combined arms capability and lethality needed to defeat likely future adversaries.

The Armored Brigade Combat Team (ABCT) remains the most capable combined arms maneuver formation able to conduct combined arms maneuver operations against hybrid or high end threats. Improvements in lethality, mobility,

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and protection for our ABCTs is delivered through modernization of the existing Abrams Tank and Bradley Fighting vehicle fleets. Abrams and Bradley improvements are achieved through incremental Engineering Change Proposals (ECPs). Replacement of the aging M113A3 family of vehicle fleet with the Armored Multi-Purpose Vehicle (AMPV) will increase the mobility and protection of the ABCT and allow the mission command, medical support, and mortar vehicles to better support ABCT combined arms maneuver. Initial installation of Active Protection Systems (APS) on Abrams and Bradley will provide options for improving ABCT protection.

### III. FY 2017 Key Investments

To meet the readiness and modernization objectives for the Army, the Ground Maneuver portfolio objectives for FY 2017 are:

- Begin production of Abrams Engineering Change Proposal (ECP) 1a.
- Support Bradley ECP 1a testing and integration of Improved Forward Looking Infrared (IFLIR) into the Abrams ECP1b.
- Continue fielding of Bradley ECP 1 for suspension and track upgrades and begin production of ECP 2a focused on network integration and enabling Size, Weight, Power & Cost (SWaP-C) improvements (ECP2a) for the Bradley A3 fleet.
- Support Bradley ECP 2a testing and integration of IFLIR into the Bradley ECP2b.
- Continue Engineering, Manufacturing, and Development (EMD) phase of the AMPV program toward replacing the legacy M113s within the Armored Brigade Combat Team (ABCT).
- Support program initiation and analysis for Mobile Protected Firepower.
- Complete fielding the 3rd Double-V-Hull (DVH) brigade and begin production of the 4th Brigade set through the Stryker Exchange Program. The fourth DVH Brigade set will include power and mobility upgrades from ECP program.
- Support the development effort to upgrade the Remote Weapon System on the Stryker vehicle to improve optics and upgrade the weapon to have a medium caliber weapon station; integrate a Javelin Weapon System on current Remote Weapon Stations.
- Procure GMV as a Commercial/Government-off-the-Shelf (C/GOTS) solution that addresses a significant mobility gap in the Infantry Brigade Combat Teams (IBCT).
- Begin development of an advanced sensor and lethality suite for future integration on the Joint Light Tactical Vehicle (JLTV) for use as a Light Reconnaissance Vehicle.
- Support integration of Active Protection Systems on Abrams, Bradley, and Stryker.

IV. Investment Strategy

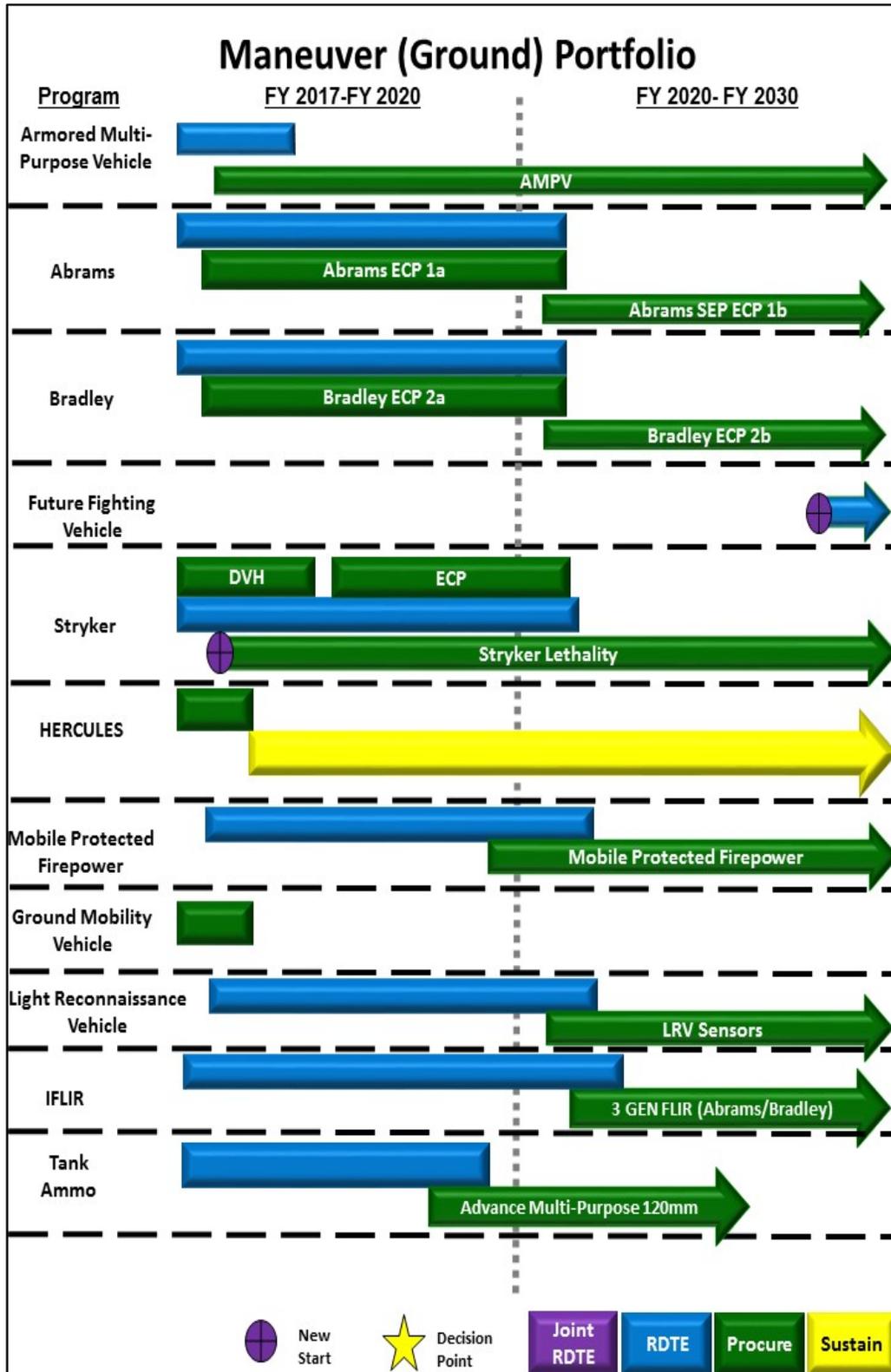


Figure 2. Maneuver Investment Strategy

## ***Mission Command (Applications)***

### **I. Portfolio Overview**

LandWarNet (LWN) 2020 and Beyond is the Army's single network - a system of systems connecting Soldiers, platforms, formations, posts, camps, stations, and other facilities. It is the Army's portion of the Joint Information Environment (JIE) and it supports Army, Joint, Coalition, and Interagency operations with a network protected from cyber-attacks. This portfolio resources the operational applications and software framework providing solutions to Army Warfighting Challenge 19 (Exercise Mission Command). The end state is a coherent, intuitive network of command and control applications and software tools providing our Soldiers a secure, defensible, cyber compliant, and rapidly configurable capability.

### **II. Strategy Update**

Budget reductions have impacted the Mission Command applications portfolio. To support an effective and efficient network with fewer resources, several programmatic delays and accepted risks were adopted. The goal is to continue fielding Joint Battle Command-Platform (JBC-P) for approximately 40 BCTs and Brigade size formations, including completing replacement of Enhanced Position Location Reporting System (EPLRS) in BCTs in FY 2017. Major changes since PB16 include the development and procurement of Defense Business System Enterprise Resource Programs and the development and procurement of Defensive Cyber Operations (DCO) tools into the portfolio.

### **III. FY 2017 Key Investments**

To meet the readiness and modernization objectives for the Army, the Mission Command (Applications) portfolio objectives for FY 2017 are:

- Support implementation of Mounted Computing Environment (MCE) as part of Common Operating Environment (COE).
- Resource developmental efforts for Command Post Computing Environment to implement COE and provide the common software and services in the server infrastructure to support COE V3 fielding in FY 2019. This major tactical network modernization effort delivers command post capabilities interoperable with other computing environments and converges/simplifies mission command onto a cyber-hardened common server infrastructure with standardized common services supported by a unified data strategy.
- Initiate development and testing of an Electronic Warfare Planning and Management Tool (EWPMT).

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- Refocus the annual Network Integration Evaluation (NIE), completing critical integration of the Army Mission Command Network 2020.
- Complete the development of The Global Command and Control System-Army (GCCS-A) v2 Bridge Effort by FY 2017.
- Continue development of Defensive Cyber Operations (DCO) capability and integration efforts.
- Start the Army Contract Writing System (ACWS) Risk Reduction, blueprinting, and interface definition efforts.
- Complete fielding of Global Combat Support System- Army (GCSS-A) Increment 1 replacing Standard Army Maintenance System (SAMS) and Property Book Unit Supply Enhanced (PBUSE). Provide the initial funds for the development of GCSS-A Increment 2 software for Aviation maintenance, Business Intelligence/Business Warehouse, and Army Pre-Position Stocks.
- Complete the design, development, integration, and test activities of the Release 2.0 of the Integrated Personnel and Pay System – Army (IPPS-A) Increment 1.
- Start Analysis of Alternatives for Global Force Management Objective System.
- Procure JBC-P for approximately 40 BCTs and Brigade size formations.
- Begin the procurement of hardware for DCO infrastructure in tactical Mission Command platforms.
- Fund General Fund Enterprise Business System (GFEBs) Increment 1 modernization of the system infrastructure.
- Procure the tactical server infrastructure (TSI) for Command Post Computing Environment (CP CE) implementation and fielding of COE V3 in FY 2019.
- Procure first capability drop of EWPMT.
- Continue to support automation for HQDA Planning, Programming, Budgeting, Execution (PPBE) Systems (PPB BOS).
- Partially resource GFEBs Increment 1 system sustainment for break/fix and security patches, Solutions Applications Products, (SAP) Inc. licenses, and server and software maintenance.

IV. Investment Strategy

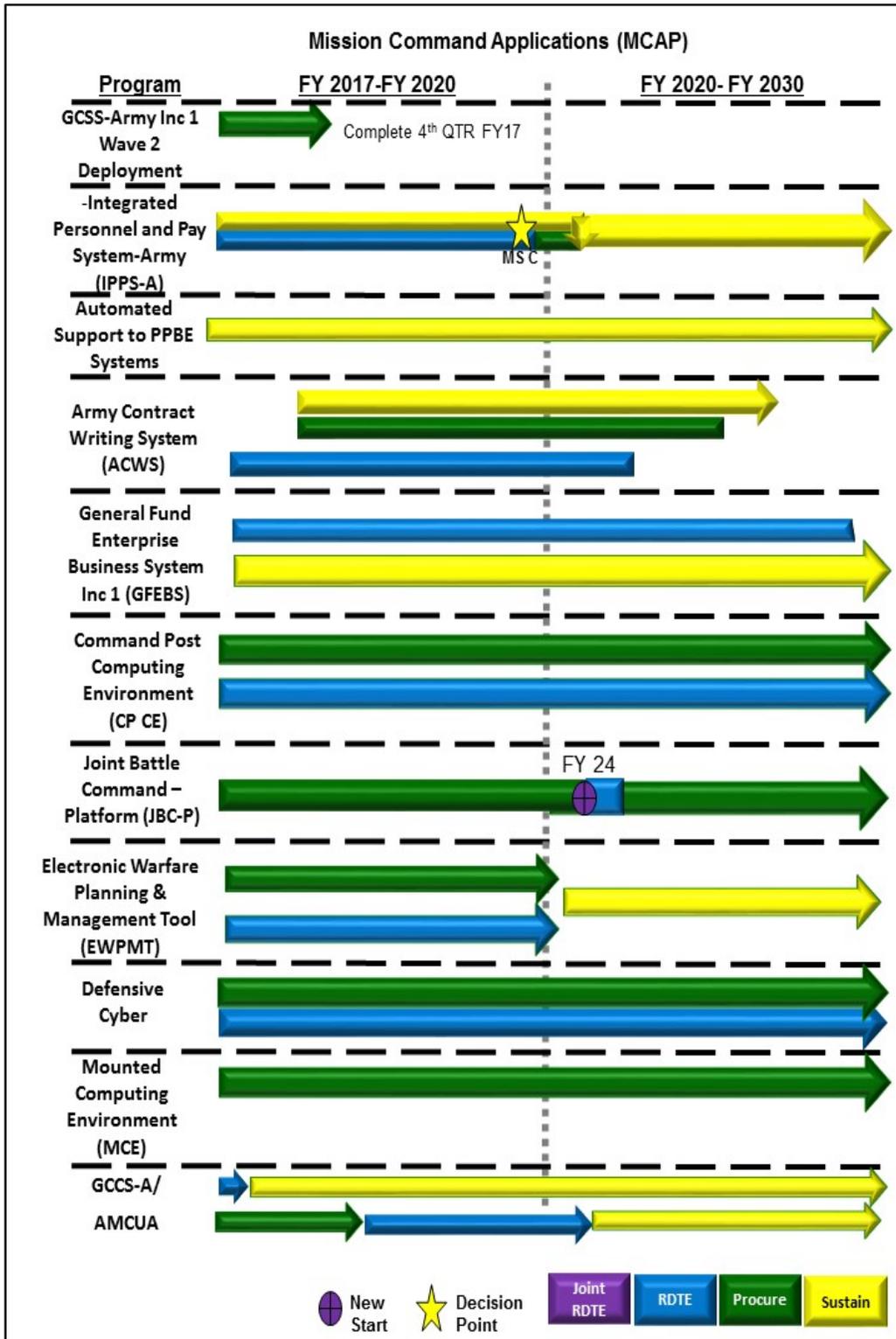


Figure 3. Mission Command (Applications) Investment Strategy

## ***Mission Command (Transport and Enablers)***

### **I. Portfolio Overview**

The Mission Command Transport and Enablers portfolio resources the operational transport layer of the network, which supports Army, Joint, Coalition, and Interagency operations. This portfolio resources the operational applications and software framework providing solutions to Army Warfighting Challenge 7 (Conduct Space Operations and Maintain Communications). The end state is to achieve expeditionary, uninterrupted mission command through a network comprised of intuitive, secured, standards-based capabilities adapted to commanders' requirements, and integrated into a common operating environment. Network capabilities are assured, interoperable, tailorable, collaborative, identity-based, and accessible at the point of need in operations that include unified action partners.

### **II. Strategy Update**

Budget reductions have also impacted the Mission Command Transport and Enablers portfolio. To support an effective and efficient network with fewer resources, several programmatic delays and accepted risks were adopted. The goal is to continue fielding critical capabilities to Brigade Combat Teams (BCT) to improve the network. Key attributes of this strategy include procuring and supporting Nett Warrior fielding to meet dismounted leader command and control/situation awareness networking requirements for FY 2016 and FY 2017 Operational Capability Set BCTs; procuring and fielding Handheld, Manpack, and Small Form Fits (HMS) Manpacks, Rifleman Radio, and Mid-Tier Networking Vehicle Radio (MNVR) systems for at least two BCTs per year; initiating Cryptographic Modernization Initiative to meet National Security Agency cease key date requirements; and procuring and fielding WIN-T Increment 2.

### **III. FY 2017 Key Investments**

To meet the readiness and modernization objectives for the Army, the Mission Command (Transport and Enablers) portfolio objectives for FY 2017 are:

- Support MNVR systems testing and evaluation events to support production and fielding decisions.
- Initiate Cryptographic Modernization Initiative to meet National Security Agency 'cease key date' requirements.
- Fund the development of a Microgrid technology through the Power, Distribution, Illumination, System, and Electrical (PDISE) Program.
- Start the developmental effort for the Assured Position, Navigation, and Timing (A-PNT) program.
- Complete testing and fielding of an Enroute Mission Command System to the Global Response Force (GRF).
- Procure WIN-T Increment 2, equipping two BCTs, and five battalions aligned to those BCTs.
- Procure and field HMS Manpacks and Rifleman Radio systems for at least two Operational Capability Set BCTs.
- Procure and support Nett Warrior fielding to meet dismounted leader command and control/situation awareness networking requirements for FY 2016 and FY 2017 Operational Capability Set BCTs.
- Continue procuring and fielding the fuel-efficient Advanced Medium Mobile Power Systems (AMMPS), which greatly reduces OPTEMPO costs through the Army operating force.

IV. Investment Strategy

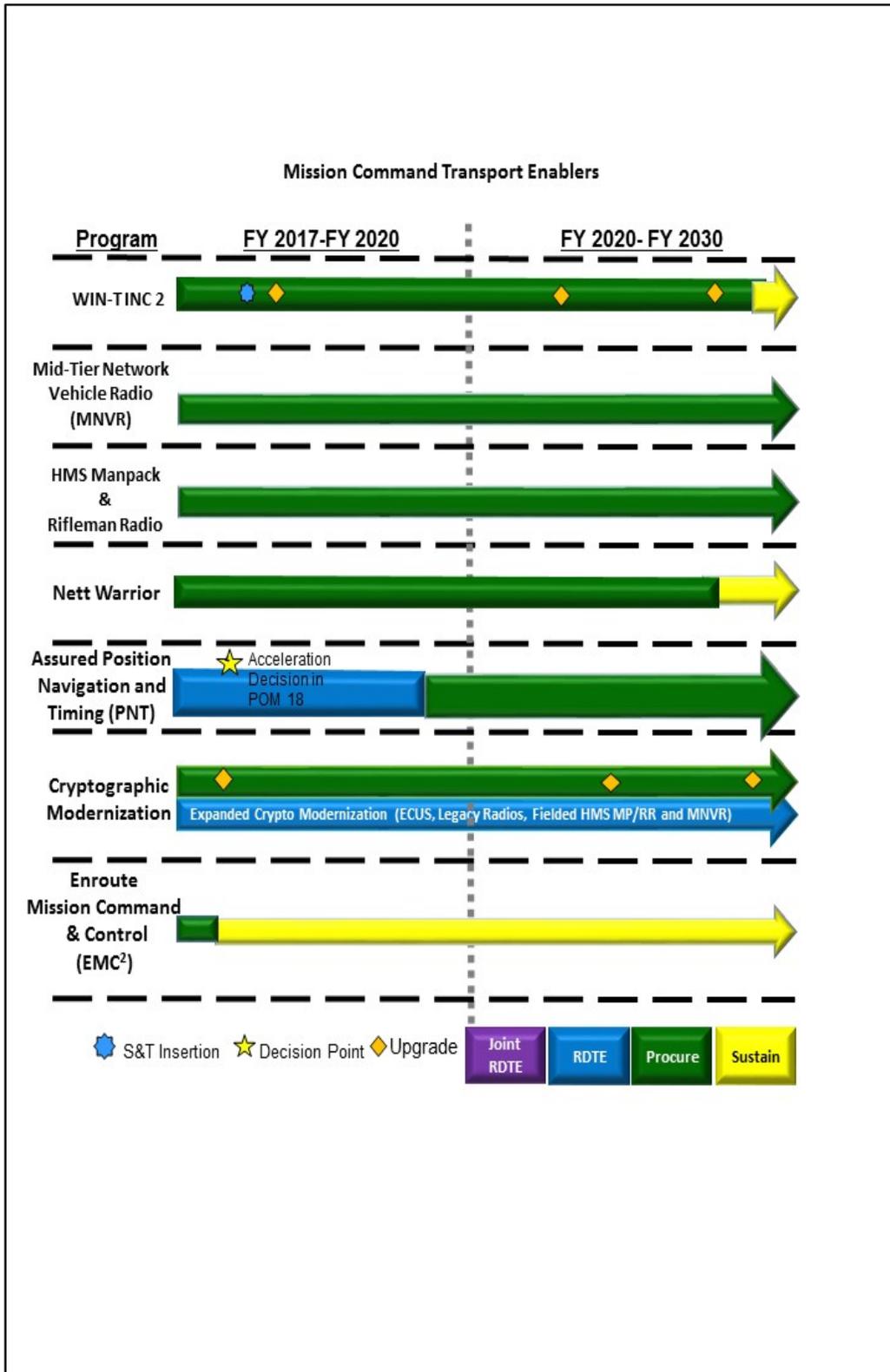


Figure 4. Mission Command (Transport and Enablers) Investment Strategy

## ***Intelligence***

### **I. Portfolio Overview**

The Intelligence and Electronic Warfare (IEW) portfolio includes all aspects of intelligence operations as well as the Army's operational electronic warfare capability and offensive cyber capability. The intelligence portion incorporates key components of intelligence collection, processing, exploitation, analysis and production, and dissemination across four primary layers: Foundation, Terrestrial, Aerial and Space. The portfolio equips the intelligence core competencies, including All-Source Intelligence, Signals Intelligence (SIGINT), Counterintelligence (CI)/Human Intelligence (HUMINT) and Geospatial Intelligence (GEOINT), including full motion video (FMV). The portfolio also includes a secure and robust intelligence architecture, synchronized and integrated with the Army and Intelligence Community's technology and network initiatives. This architecture supports all aspects of tasking, processing, exploitation, analysis, and dissemination of intelligence to meet the readiness and modernization objectives of the *Army Operating Concept* (AOC).

### **II. Strategy Update**

Based on fiscal constraints and operational requirements, the IEW Portfolio procurement strategy continues to balance modernization with operational commitments to ensure we support the fight today and are ready to fight tomorrow across the range of military operations. We will field systems to support the AOC and F2025B, leverage partner and industry Science and Technology investments to improve our fleet, and achieve multi-intelligence, multi-modal capabilities. We will manage risk and modernize existing systems to gain/retain overmatch and will gain efficiencies from the Common Operating Environment. As required, the Army will field quick reaction capabilities to the combatant commands and leverage those efforts to reduce program of record cost while increasing readiness. We will continue to divest legacy systems and will reset and sustain required capability based upon technical obsolescence and end of useful life. Specifically, we will resource and enhance our advanced analytics capabilities that leverage the Intelligence Community Information Technology Enterprise and support the Command Post Computing Environment. To keep pace with the rapidly evolving global communications environment, we will maintain, modernize, and integrate our terrestrial SIGINT and HUMINT capabilities to ensure operational readiness. We will modernize our manned Aerial ISR capability with a mix of sensor upgrades and replacements, and transform to a full fleet of multi-intelligence collection platforms. We will provide a range of sensor payloads to support Unmanned Aircraft System (UAS) platforms to meet the requirements for persistent ISR and reconnaissance, surveillance, and target acquisition. We will continue to leverage Space Layer capabilities through Tactical Exploitation of National Capabilities (TENCAP) and we have begun efforts to develop offensive electronic attack capability while refining our

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defensive electronic attack capability. We will develop capabilities to challenge the growing UAS threat.

### III. FY 2017 Key Investments

To meet the readiness and modernization objectives for the Army, the Intelligence portfolio objectives for FY 2017 are:

- Fund Distributed Common Ground System - Army (DCGS-A) to provide for the initial fielding of enhanced Increment 1, Release 2 capabilities to the Force, and support Increment 2 development and testing. DCGS-A Increment 2 provides a modernized data management architecture that complies with the Common Operating Environment, the Intelligence Community Information Technology Enterprise, and the Joint Information Environment; the integration of emerging sensor and automation technology; and enhanced ease of use and analytic capabilities. Funding provides the initial procurement of DCGS-A Tactical Intelligence Ground Stations to equip activating Expeditionary MI battalions in all components.
- Modernize legacy Prophet systems into the Prophet Enhanced baseline and provide pre-planned product improvement for SIGINT relevancy to threat changes to be used as a bridge to a new multi-intelligence, multi-modal system.
- Convert quick reaction capability systems into Enhanced Medium Altitude Reconnaissance and Surveillance System (EMARSS) Capability Production Document (CPD) compliant variants.
- Fund Airborne Reconnaissance Low-Enhanced (ARL-E) to procure Mission Equipment Packages, cockpit/aircraft survivability upgrades of aircraft, and the development of Long Range Radar.
- Fund Guardrail Common Sensor (GRCS) to provide for recapitalization and upgrade of MX-15HD full motion video (FMV) cameras. Support upgrades to communications, navigation, and surveillance systems to meet Global Air Traffic Management requirements.
- Develop and procure Tactical SIGINT Payloads (TSP) and provide Interim Contractor Support (ICS). Provide ICS for Common Sensor Payload (CSP) and Small Tactical Radar Lightweight (STARLite) UAS Payloads.
- Fund TENCAP to support exploitation of evolving national technologies: Theater Net-Centric Geolocation, Advanced Miniaturized Data Acquisition System (AMDAS), Geospatial Processing, Exploitation, and Dissemination (PED) modernization, Air Vigilance and Military Exploitation of Reconnaissance and Intelligence Technology Projects.
- Maintain the Trojan Special Purpose Integrated Remote Intelligence Terminal (SPIRIT) Top Secret/Sensitive Compartmented Information (TS/SCI) capability.

## Army Equipment Program in Support of President's Budget 2017

- Develop Duke Technical Insertion hardware and software solutions to maintain relevancy and evaluation of technologies.

IV. Investment Strategy

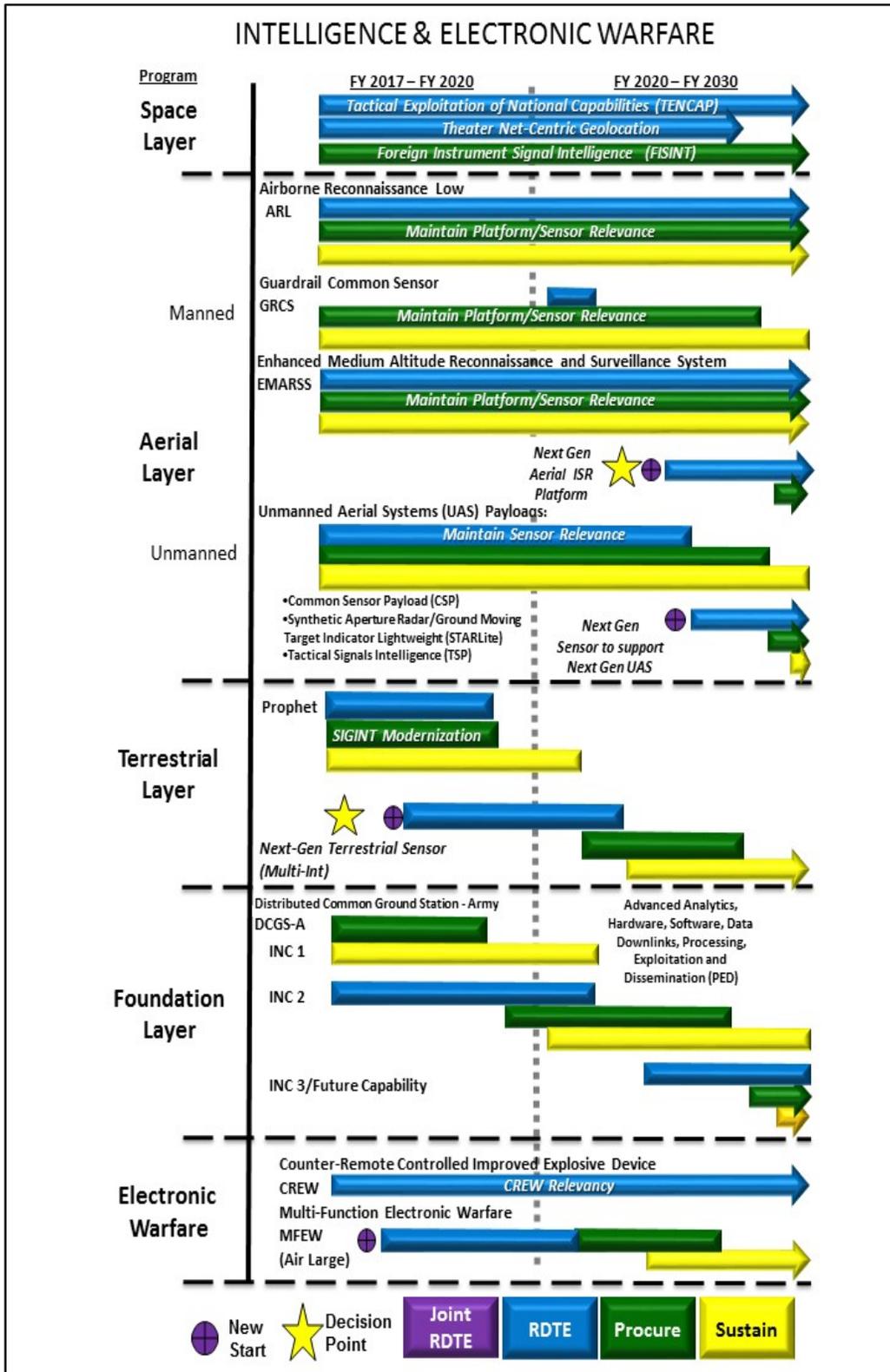


Figure 5. Intelligence Investment Strategy

## **Aviation**

### **I. Portfolio Overview**

The Aviation portfolio directly supports Combatant Commanders by providing solutions to Army Warfighting Challenge 11 (Conduct Air-Ground Reconnaissance). The portfolio consists of core aviation programs, to include utility and cargo, fixed wing mission profiles, reconnaissance/attack, Unmanned Aircraft Systems (UAS), and enabling systems that directly support aviation unit readiness; which meet readiness and modernization objectives of the *Army Operating Concept*.

### **II. Strategy Update**

As the Army downsizes and faces continued resource limitations, it is necessary to restructure Army Aviation. The strategy is designed to retain our most capable aircraft while divesting our least capable. The plan equips reconnaissance and attack units with the AH-64E Apache while Shadow platoons are fielded to reconnaissance battalions to facilitate manned/unmanned teaming. The training base will field the UH-72A Lakota in lieu of the legacy aircraft. All components will receive the modernized Black Hawk UH/HH-60M, UH-60V, and the CH-47F Chinook to fill their lift and cargo aviation structure requirements. The Army will modernize aircraft and develop disruptive technologies nested within the *Army Operating Concept* to increase maneuverability, survivability, lethality, and mission command capabilities. In a resource-constrained environment, Army Aviation will target investments in essential technologies to close key capability gaps while maintaining the pace of Apache and Blackhawk fleet modernization. Beyond 2025, the Apache and Blackhawk fleet 'buyouts' are the key modernization inflection points and the Army's funding bridge to afford the increased speed, range, survivability, and payload of Future Vertical Lift.

### **III. FY 2017 Key Investments**

FY 2017 Aviation investments include required capabilities in the reconnaissance, attack, unmanned aerial systems, utility and cargo, fixed wing, and aviation enabler systems mission profiles. Specific investments in this portfolio are:

- Resource the developmental engineering and testing for the Common Infrared Countermeasure (CIRCM) B-Kits, including the A-Kit development and testing for the UH-60M, MH-60M, HH60M, and the AH-64E Platforms. Resource the development of an advanced missile warning system to replace Common Missile Warning System (CMWS).

## Army Equipment Program in Support of President's Budget 2017

- Procure Remanufactured AH-64E Apache Attack Helicopters in a proposed FY 2017-21 Multi-Year Contract (MYC), Modernized Day Sensor Assemblies (MDSA) Phase 2 and 3, Modernized Radio Frequency Interferometers (MFRI), and a Health Monitoring System.
- Procure launchers, Mission Computers, Block III Engines, Weatherization kits, EO/IR/LD Upgraded Payloads, and New Equipment Training for the Shadow TCDL Retrofits.
- Continue the procurement of UH-60M aircraft, recapitalization of UH-60A into UH-60L aircraft, development of UH-60V aircraft, and divestment of legacy aircraft. In FY 2017, the Army will enter into the ninth H-60 Black Hawk Multi-Year Contract and procure UH-60M utility aircraft and HH-60M MEDEVAC aircraft.
- Procure CH-47F Remanufactured Aircraft and Engineering Change Proposals (ECPs) including Cargo On/Off Loading System, Ballistic Protection System, Rotor Blades, Airframe Optimization and Payload Reclamation, Crashworthy Seats, Cargo Platform Health Environment and Engine Improvements. FY 2017 also begins the Engineering Manufacturing and Development phase for the H-47 Block II.
- Procure Future Fixed Wing Utility Aircraft (FUA) which begins the replacement of the current C-12 aircraft fleet.
- Resource Low-Rate Initial Production (LRIP) for Joint Air-to-Ground Missile (JAGM), the next generation of aviation-launched missiles to replace the laser Hellfire II and the Longbow radar missile.
- Resource development activities for an integrated rotorcraft situational awareness augmentation system to facilitate operations in degraded environment conditions.
- Continue development of the Improved Turbine Engine (ITE) in FY 2017 with two vendors undergoing Preliminary Design Review (PDR), leading to a down select in FY 2018 to a single vendor to develop the engine.

IV. Investment Strategy

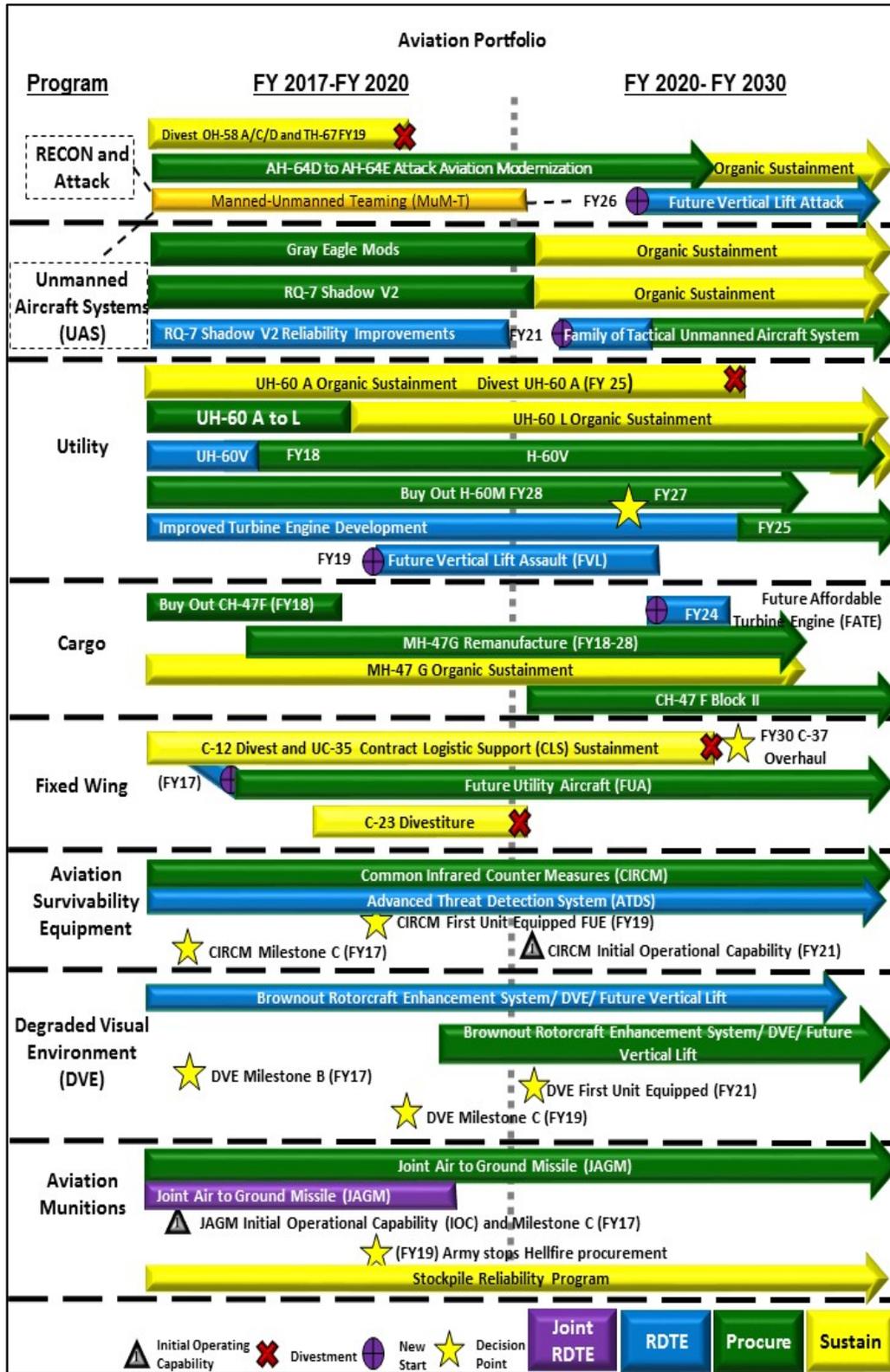


Figure 6. Aviation Investment Strategy

## ***Fires***

### **I. Portfolio Overview**

To prevail in future operational environments and succeed in a wide range of contingencies, the Army must have a campaign-quality, expeditionary Field Artillery force that delivers and integrates lethal and non-lethal fires. The Field Artillery Modernization Strategy directly supports Combatant Commanders by providing solutions to Army Warfighting Challenges 17 (Integrate Fires) and 18 (Deliver Fires). The Army will focus modernization efforts on enhancing the precision of our platforms and munitions, increasing the capability to engage targets at greater ranges, and enabling performance in a Global Positioning System (GPS) degraded/denied environment. The Army will also modernize our sensors' capability to locate and track targets more accurately in order to make better use of precision weapons. The Fires portfolio consists of fire support capabilities in the following four areas: Sensors, Delivery Platforms, Munitions, and Mission Command Systems.

### **II. Strategy Update**

The current and future field artillery challenges necessitates modernizing the fires formations. This force must be agile, capable, affordable, and able to employ a wide range of capabilities from the tactical to strategic level as part of Army, Joint, and Coalition forces.

As the field artillery capability evolves and transforms, we must ensure that we maintain the correct mix of both capacity and capability to support the future force with flexible and agile organizations. Resource constrained environments inform both capability and force structure transformation. In the near-term our priorities remain; improving precision targeting capability, developing and procuring precision munitions, enhancing the precision and lethality of our Brigade Combat Teams, improving the survivability and lethality of our firing platforms, and integrating of our mission command platforms in the Battle Command Network Structure.

The Army will field Firefinder Radars, which provide 360-degree coverage with increased range and accuracy. We will continue the fielding of our digitized towed howitzers to our Infantry Brigade Combat Teams (IBCTs), and continue to develop and field the precision guidance kit (PGK).

The Army will develop and field a Long Range Precision Fires capability (LRPF): a new long-range successor to Army Tactical Missile System (ATACMS), which will provide an increased capability to combatant commanders and allow them to shape the operational and strategic environment.

### III. FY 2017 Key Investments

To meet the readiness and modernization objectives for the Army, the Fires portfolio objectives for FY 2017 are:

- Support the development and fielding of Joint Effects Targeting System (JETS) to our forward observers and special operations forces.
- Support the modernization of our Lightweight Laser Designator Rangefinder (LLDR) to increase precision capability for both mounted and dismounted forward observers.
- Continue procurement of AN/TPQ-53 Firefinder Radar and complete the procurement of the AN/TPQ-50 Counter Mortar Radar.
- Support procurement of the M109A7 Paladin Integrated Management (PIM) and modernization upgrades to the Paladin Fire Control System (PFCS) on the remainder of the Paladin Fleet. These upgrades transition directly into the PIM program and are an investment in sustaining the lethality and survivability of the Paladin.
- Upgrade the High Mobility Artillery Rocket System (HIMARS) and M270A1 Multiple Launch Rocket System (MLRS) launchers by increasing their survivability and improving the fire control systems.
- Invest in the next generation of LRPF to provide combatant commanders with increased long-range fires lethality.
- Procure ATACMS – Service Life Extension Program (SLEP), recapitalizing and extending the shelf life of our current long-range missile to bridge the gap until LRPF can be developed and fielded.
- Procure Guided Multiple Launch Rocket System- Alternate Warhead (GMLRS-AW) rockets, providing an area effects munition that is in compliance with Department of Defense (DoD) policy on cluster munitions.
- Support continued development and procurement of the precision guidance kit to provide increased lethality to our cannon battalions; modernize Excalibur via completed procurement of the Excalibur 1b round.

IV. Investment Strategy

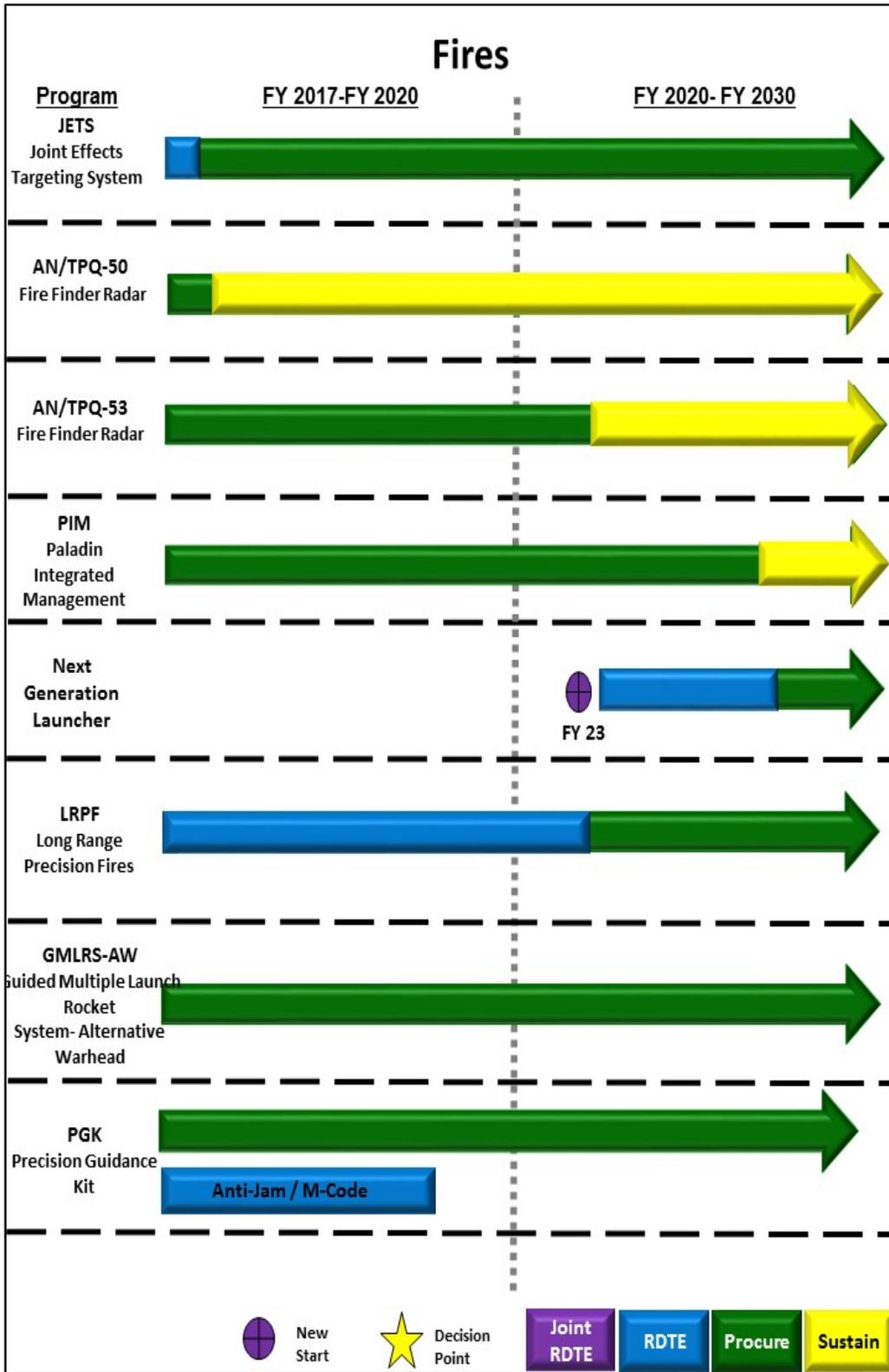


Figure 7. Fires Investment Strategy

## ***Air and Missile Defense***

### **I. Portfolio Overview**

Army Air and Missile Defense (AMD) provides critical capabilities to enable the Joint Force mission by countering the full range of air and missile threats. Forward deployed AMD forces deter conflict by establishing and maintaining a credible defense, shape the environment by sustaining strong relationships with our partners and Allies, and if deterrence fails, AMD is an integral part in defeating adversary Anti-Access/Area Denial (A2/AD) and protecting vital assets to ensure freedom of action of the Joint Force. The modernization strategy is driven by a complex and changing joint operational environment which requires capabilities from the tactical/joint through strategic levels at home and abroad. The AMD portfolio consists of required capabilities in the following areas: Ballistic Missile Defense (BMD), Counter Unmanned Aerial System (CUAS), Cruise Missile Defense (CMD), Indirect Fire Protection Capability (IFPC), and AMD Mission Command.

Our AMD forces require a different operational approach. We can no longer afford to match specific weapon systems against specific threats. We must take a more holistic approach when it comes to defeating aerial threats through a networked, open, and modular architecture of whatever AMD capabilities are deployed, including Joint and potentially Coalition allies.

### **II. Strategy Update**

As AMD capability evolves and transforms, we must improve our ability to support the future force with flexible and agile capability while maintaining current readiness. Development of an Integrated Air and Missile Defense Battle Command System (IBCS) is key to our modernization as it creates operational flexibility and effective force tailoring. Upgrades to the current Patriot system are needed for urgent near-term improvements to address current threats and bridge the capability gap until the next Lower-Tier Air and Missile Defense Sensor capability is fielded in FY 2026.

The Army will field Missile Segment Enhancement (MSE) missiles and associated launcher upgrade kits to counter sophisticated and complex threats. Additionally, the Army will continue the fielding of Theater High Altitude Area Defense (THAAD) to improve capabilities against Medium Range Ballistic Missiles (MRBM). Finally, the Army will develop and field IFPC Increment 2-Intercept (IFPC Inc. 2-I), an effective cruise missile defense/CUAS system.

### III. FY 2017 Key Investments

To meet the readiness and modernization objectives for the Army, the Air and Missile Defense portfolio objectives for FY 2017 are:

- Continue development and testing of IBCS hardware and software (SW) in support of first LRIP in FY 2017, Initial Operating Capability (IOC) fielding to the first Patriot battalion in FY 2018, leading to the eventual establishment of a fully integrated fire control network (IFCN).
- Fund the multi-block acquisition approach to provide a 360 degree, mobile, robust protection capability shifting initially from Counter – Rockets, Artillery, and Mortars (C-RAM) to CUAS and CMD. Provide support for fielded C-RAM systems, while implementing development and procurement of Multi-Mission Launchers (MML) as part of the Indirect Fire Protection Capability (IFPC) investment.
- Support software development and integration activities necessary to ensure compliance with Army Common Operating Environment (COE) requirements.
- Support continued fielding of Rockets, Artillery, and Mortars (RAM) Warn to Army BCTs. Support activities required to complete fielding of Land-based Phalanx Weapon System (LPWS) to two Active Component (AC) IFPC/Avenger battalions.
- Support continual software obsolescence avoidance and small/low/slow enhancements for UAS; complete application and fielding of small/low/slow for UAS and 31 Mode 5 modification upgrades to the Sentinel radars.
- Support procurement of MSE missiles and MSE launch station upgrades and procure critical software upgrades to address advanced Theater Ballistic Missiles (TBM) attacks, improve electronic protection capabilities, and field communications upgrades.
- Support the Deputy Secretary of Defense's and Vice Chief of Staff of the Army's initiative of reducing stress on the Patriot force, which includes the establishment of an AMD Test Detachment (FY 2018).
- Support implementation of the results of Office of the Secretary of Defense (OSD) directed Analysis of Alternatives and concept development for future Lower Tier Air and Missile Defense (LTAMD) Sensor capability.

IV. Investment Strategy

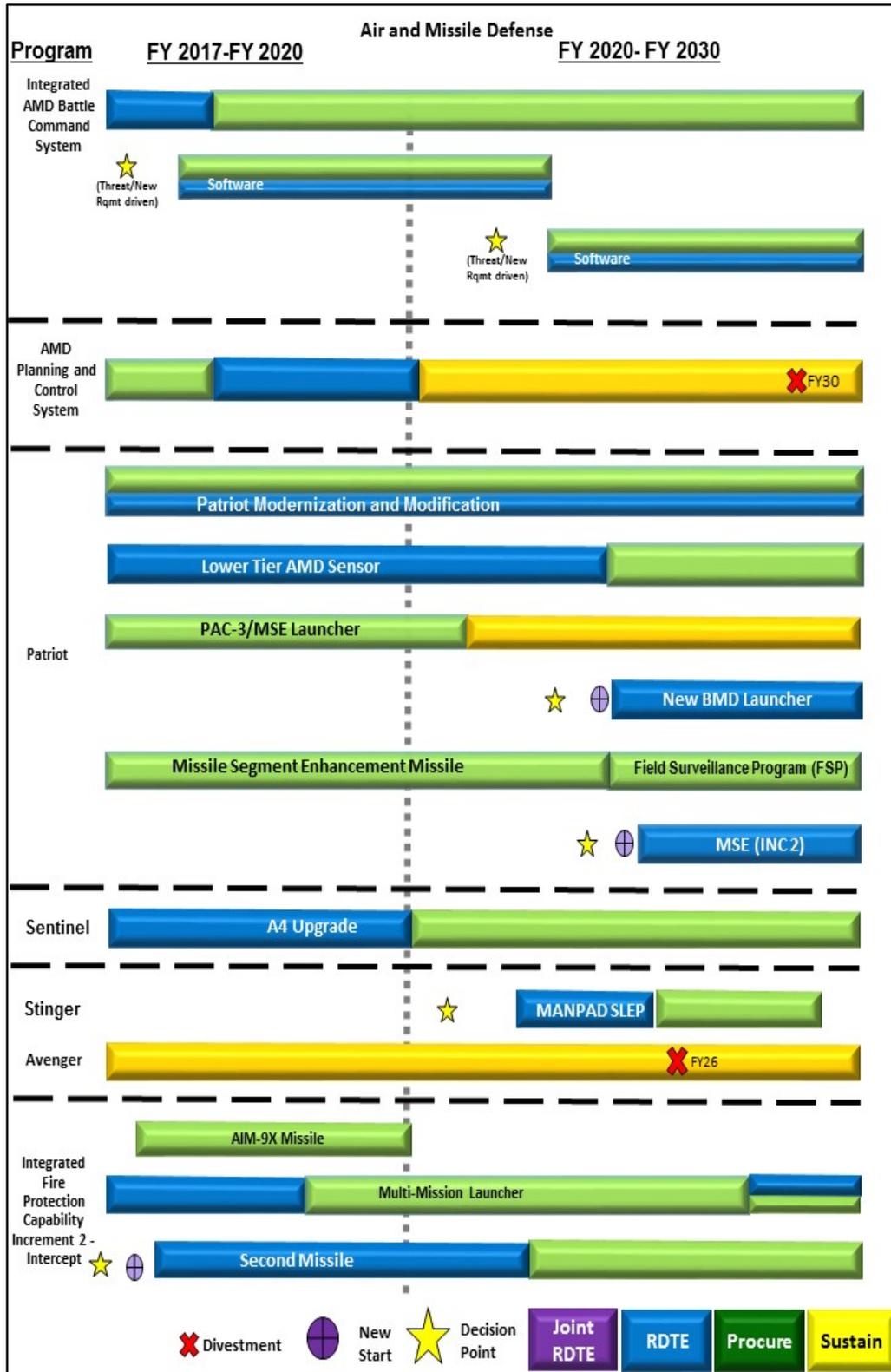


Figure 8. Air and Missile Defense Investment Strategy

## ***Protection (Force Protection and CBRNE)***

### **I. Portfolio Overview**

The Force Protection portfolio focuses on tailorable and expeditionary capabilities to counter Weapons of Mass Destruction, defend the homeland, safeguard our forces, augment combat action, and ensure freedom of maneuver allowing commanders to operationally maximize and conserve their unit fighting potential. The portfolio provides Chemical, Biological, Radiological, Nuclear and Explosives (CBRNE), Explosive Ordnance Disposal (EOD), force protection, forensics and law enforcement, non-lethal, and camouflage / concealment / deception (CCD) equipment across the battlefield. This portfolio reflects the Army's strategic priorities, bridges capability gaps, and prioritizes Science and Technology investments to maximize the potential of game-changing land power technologies that counter emerging threats and ensure Army formations retain tactical overmatch against complex state and non-state threats. The Protection Portfolio directly supports Combatant Commanders by providing solutions to Army Warfighting Challenge 5 (Counter Weapons of Mass Destruction) and Army Warfighting Challenge 6 (Homeland Operations). Figure 9 displays a selected collection of capabilities as projected from current, near, and extended term perspectives.

### **II. Strategy Update**

Based on fiscal constraints, the Force Protection Portfolio procurement strategy takes calculated risk while continuing to provide the Soldier with the highest level of protection possible. We fund the modernization of prioritized capabilities while leveraging equipment recapitalization, support from the Joint Chemical Biological Defense funding, and Commercial off the Shelf (COTS) equipment. The portfolio supports enhanced survivability in Consequence Management, specifically with the Chemical, Biological, Radiological, Nuclear (CBRN) Response Enterprise (CRE) Personal Protective Equipment (PPE) and Contamination Avoidance detectors, to include the upgraded Nuclear, Biological, Chemical Reconnaissance Vehicle (NBCRV) sensor suites. Integrated Base Defense ties in layered protection measures to secure contingency bases. Additionally, procurement support for EOD capabilities allows support for mobility operations while investment in the Chemical Biological Protective Shelter (CBPS) enables enhanced survivability.

### **III. FY 2017 Key Investments**

The FY 2017 Force Protection portfolio investments ensure Soldiers are protected from the multitude of battlefield and homeland security hazards. Specific investments in this portfolio are:

- Fund Chemical Reconnaissance and Explosives Screening System, which identifies homemade explosives. Fund NBCRV Stryker Sensor Suite upgrades. Support the technical refresh of M41 Protective Mask test kits.
- Upgrade EOD tools essential for EOD technicians to identify and disarm EOD munitions. Recapitalize and upgrade EOD Man Transportable Robotic Systems for EOD forces.
- Procure Acoustic Hailing Device (AHD) systems, Remote Deployed Device systems, and Single-Net Solution systems in support of non-lethal options for Combatant Commanders.
- Procure CBPS Systems, a highly mobile, self-contained, rapidly deployable, chemically and biologically protected shelter that is a contaminant-free, environmentally controlled medical treatment area.
- Procure Class I, II, and III Office of Safety and Health Administration (OSHA) and National Fire Protection Association (NFPA) certified Protective Equipment in support of USNORTHCOM/ARNORTH CBRN Response Enterprise.
- Procure components of the Kits for Evidence Collection and Detainee Processing (KECDP).

IV. Investment Strategy

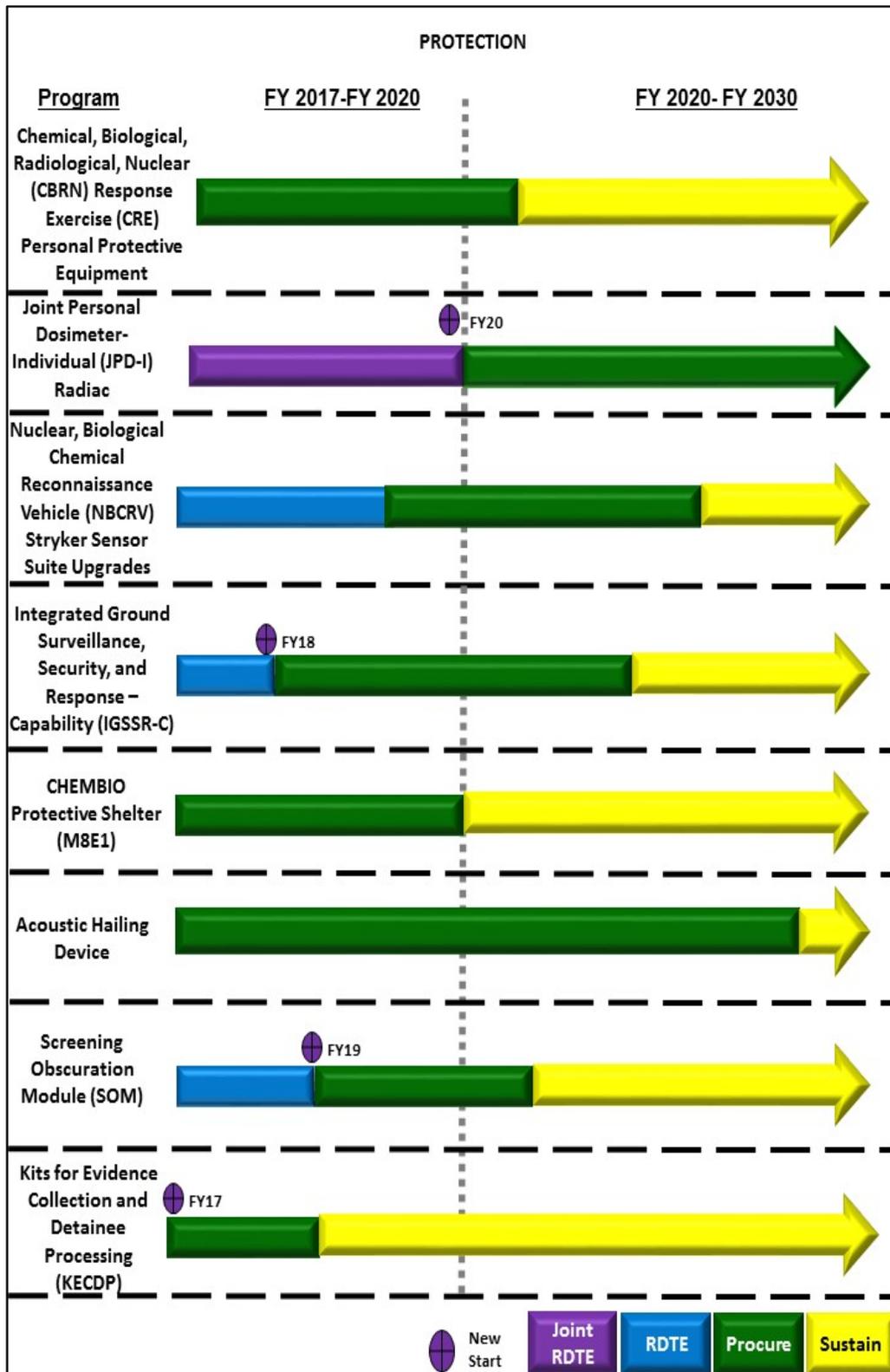


Figure 9. Protection (Force Protection/CBRNE) Investment Strategy

## ***Protection (Assured Mobility)***

### **I. Portfolio Overview**

The Assured Mobility portfolio permits military forces to gain positions of relative advantage, conduct high tempo operations, and concentrate combat power against decisive points in support of expeditionary maneuver and joint combined arms operations. The portfolio focuses on an integrated suite of capability options that commanders can tailor to protect, operationally maximize, and conserve unit fighting potential while balancing affordability and effectiveness.

### **II. Strategy Update**

The portfolio strategy maintains focus on the protection of our Soldiers with continued emphasis and development of Counter Explosive Hazards vehicles (CEH) and associated enabler systems (e.g. Rollers, Vehicle Optics Sensor Systems, Counter-Explosive devices). The prioritization of key systems that meet combatant commanders' needs (such as the Joint Assault Bridge and the Family of Scatterable Mines) will allow us to maintain our dominance on the battlefield.

In addition, we will address a significant construction equipment shortfall that would have negative long-term impact on commanders' ability to execute operations. A construction Force Design Update (FDU) change will require innovative and aggressive measures to procure and field new equipment to meet shortfalls in nearly every aspect of the construction sub-portfolio. We will resolve this shortfall with re-prioritization of funds, extension of procurement industrial lines, and alignment of older legacy equipment.

To accomplish our priorities, we accept the risk associated with a dependency upon legacy capabilities, less expensive service life extension programs, use of commercial equipment, and pooled training equipment. In addition, we will extend the procurement timelines for several systems that are of lower priority.

### **III. FY 2017 Key Investments**

The FY 2017 Assured Mobility portfolio investments protect our Soldiers and give commanders multiple options to shape their operations. Specific investments in this portfolio are:

- Procure the Joint Assault Bridges during the Low-Rate Initial Production (LRIP) period to support operational testing.
- Procure Bridge Erection Boats (BEB) to replace antiquated systems that are nearing their Economic Useful Life (EUL).
- Continue research and development of the next generation of GATOR landmine replacements.
- Procure Heavy Scrapers that are critical for our engineer forces to meet the FDU increases.
- Reset Medium Mine Protected Vehicle IIs into a program of record configuration for fielding.
- Procure All Terrain Cranes that replace obsolete equipment unable to meet current capability needs.
- Procure the T-5 Dozers to meet the construction equipment shortfall created by recent FDU changes.

IV. Investment Strategy

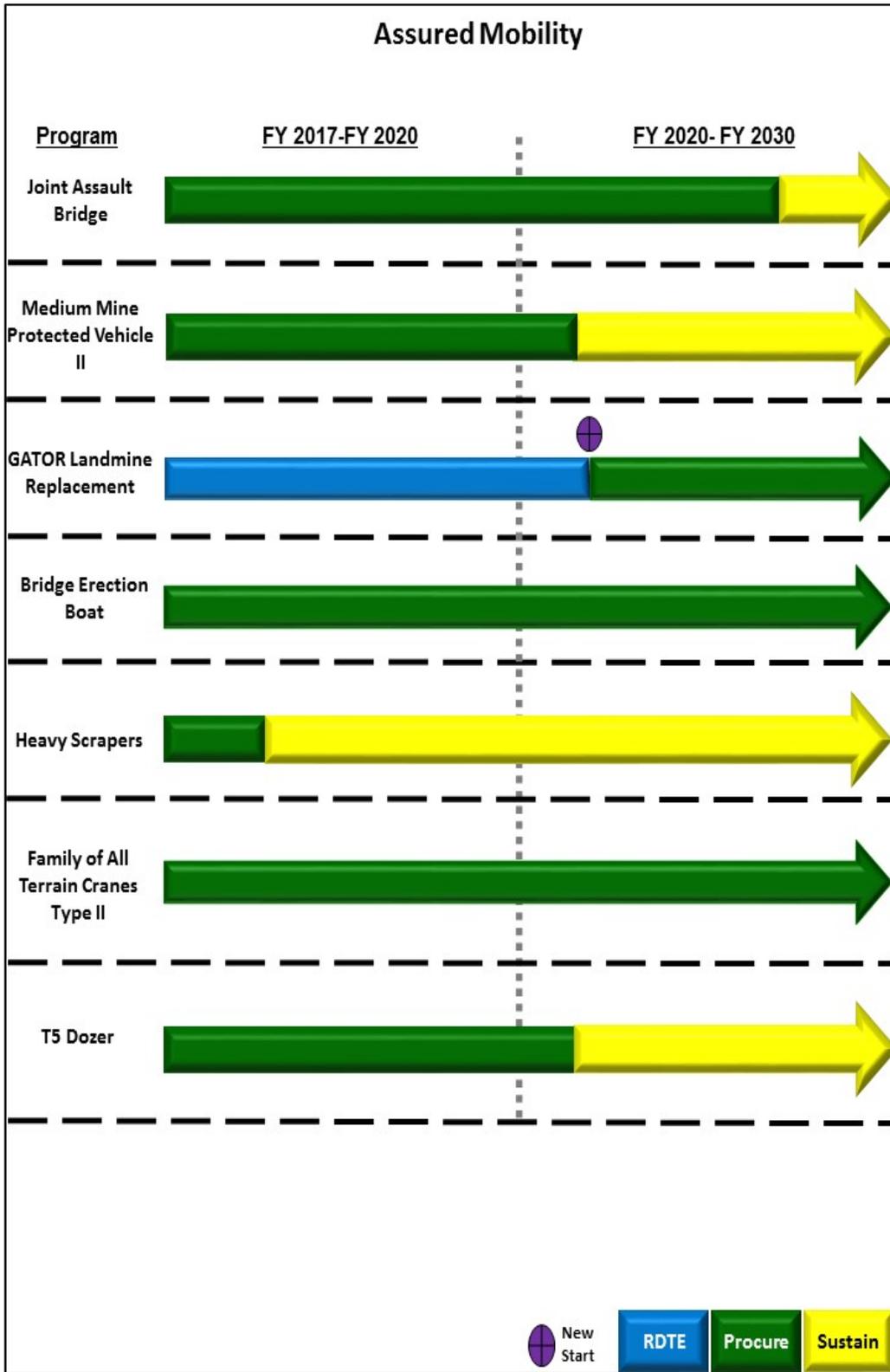


Figure 10. Protection (Assured Mobility) Investment Strategy

## ***Sustainment (Transportation)***

### **I. Portfolio Overview**

The Sustainment (Transportation) portfolio consists of Tactical Wheeled Vehicles (TWV), Army Watercraft Systems (AWS), and trailers. It provides TWV and AWS capabilities essential to conducting Expeditionary Warfare and Joint Combined Arms Maneuver operations as required by the *Army Operating Concept* (AOC) for FY 2025 and Beyond.

Tactical Wheeled Vehicles (TWV) are the workhorse within the Brigade Combat Team and provide essential close combat, command and control, medical evacuation (MEDEVAC), and sustainment functions. TWV capabilities are essential to the Army's mission and reside in almost every formation within the Army. The TWV fleet includes Light, Medium, and Heavy Tactical Vehicles with associated trailers, as well as the Mine Resistant Ambush Protected (MRAP) family of vehicles.

Army Watercraft Systems (AWS) are key enablers that provide multiple entry point options for ground forces as well as supplies and equipment to the Combatant Commander. They allow for access to shallow draft ports as well as access directly from strategic lift to a theater shoreline. AWS enable coastal and inland waterway lines of communication (LOC) to increase sustainment throughput to engaged forces. These capabilities are provided by several systems including landing craft, causeway systems, tugboats, and command and control interfaces. AWS at-sea transfer allows joint forces to by-pass intermediate staging bases to move from strategic shipping to tactical delivery of forces to a theater.

### **II. Strategy Update**

The Joint Light Tactical Vehicle (JLTV) is the centerpiece of the Army's TWV modernization strategy and a key enabler of Joint Combined Arms operations. The JLTV provides the necessary leap in protection, performance, and payload (Iron Triangle) to fill the capability gap remaining between the High Mobility Multipurpose Wheeled Vehicle (HMMWV) and the MRAP family of vehicles. The Army will begin Low-Rate Initial Production of JLTV in FY 2016.

The Maneuver Support Vessel – Light (MSV-L) is the centerpiece of Army Watercraft Modernization, replacing the Vietnam era LCM-8. MSV-L developmental efforts begin in FY 2016. C4ISR Upgrades and the Service Life Extension Program (SLEP) on the Landing Craft Utility (LCU) are also critically important enablers to the conduct of Expeditionary Warfare by Joint forces. We will begin these efforts in FY 2016.

## Army Equipment Program in Support of President's Budget 2017

We will continue Soldier protection efforts in several ways. The first is by continuing production of armor-capable TWVs toward the Army's goal of greater than or equal to 50 percent of the TWV fleet size. The next is through continued Research, Development, Testing, & Evaluation (RDT&E) and procurement at a minimum sustainment rate of TWV Protection Kits to the Army's goal of greater than or equal to 30 percent of the TWV fleet size. The LCU SLEP program will provide protection for Soldiers at weapon stations on those vessels; RDT&E efforts on MSV-L and other areas will allow us to focus on Soldier protection on AWS. Bridging the effort between Soldier protection and modernization, we will continue to reset the 8,585 enduring MRAP TWVs while divesting the non-enduring MRAP models through Foreign Military Sales (FMS) and other Excess Defense Articles (EDA) processes.

Modernization across both the TWV and AWS fleet will continue. We will accomplish this on multiple lines of effort. This includes working towards the Chief of Staff's goal to increase automated capability beginning with Leader Follower on the Palletized Load System (PLS) fleet, continuing current programs to procure modernized Palletized Load System Trailers (PLST) and Container Transfer Enhancement (CTE) for PLS trucks, and a new start to replace the current M917 Heavy Dump Truck.

### **III. FY 2017 Key Investments**

To meet the readiness and modernization objectives for the Army, the Sustainment (Transportation) portfolio objectives for FY 2017 are:

- Fund Low Rate Initial Production and begin Full Rate Production for Joint Light Tactical Vehicles.
- Procure Type I and Type II Light Engineer Utility Trailer (LEUT) for engineer formations.
- Begin Heavy Dump Truck modernization.
- Procure remaining PLST requirement.
- Modernize semi-trailers for the heavy fleet.
- Procure armor kits for Family of Medium Tactical Vehicles (FMTV) and Family of Heavy Tactical Vehicles (FHTV).
- Support Watercraft modernization by upgrading SLEP and C4ISR packages.
- Fund RDT&E for the MSV-L.

IV. Investment Strategy

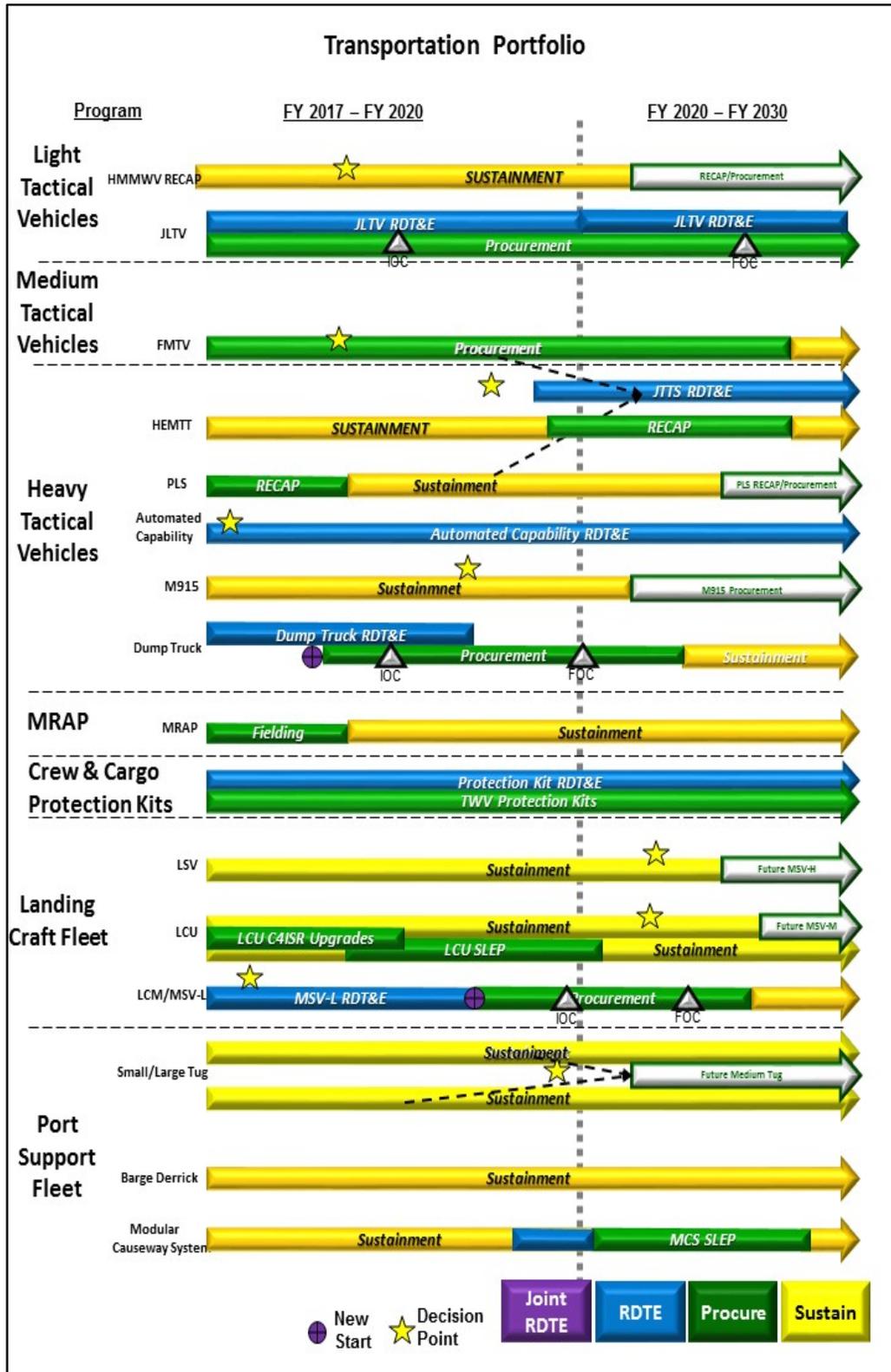


Figure 11. Sustainment (Transportation) Investment Strategy

## ***Sustainment (Service Support)***

### **I. Portfolio Overview**

The Sustainment portfolio consists of multiple systems within the Quartermaster, Ordnance, and Medical sub-portfolios.

The Quartermaster sub-portfolio includes: Aerial Delivery (Joint Precision Airdrop Systems (JPADS)); Field Feeding (Assault Kitchen (AK) and Multi-Temperature Refrigerated Container System (MTRCS)); Field Services (Force Provider) and Material Handling (5K Light Capacity Rough Terrain Forklift (LCRTF)).

The Ordnance sub-portfolio includes: Armament Repair Shop Set (ARSS), Metal Working and Machining Shop Set (MWMSS), Fire Suppression Refill Systems (FSRS), Next Generation Automatic Test System (NGATS), Maintenance Support Device-Version 3 (MSD-V3), and Calibration Sets and Test Modernization Equipment.

The Medical sub-portfolio includes: Drugs and Vaccines, Medical Equipment Sets, Medical Field Systems and Medical Communication for Combat Casualty Care (MC4).

### **II. Strategy Update**

The Sustainment Portfolio provides capabilities essential to conducting Expeditionary Warfare and Joint Combined Arms Maneuver operations as required by the *Army Operating Concept* (AOC) for FY 2025 and Beyond. Given fiscal limitations, the Army Sustainment community has established a risk informed prioritization process to ensure Sustainment Portfolio investments are prioritized to fully enable the AOC.

### **III. FY 2017 Key Investments**

The FY 2017 Sustainment investments support programs that include fuel and water systems, load handling systems, airdrop systems, tool sets, medical systems, and other combat enablers. Specific investments in this portfolio are:

- Procure Medical Devices and Medical Equipment Sets that provide health service support for Soldiers on the battlefield with current standards of care.
- Procure MC4 systems that support medical information system, enabling lifelong electronic medical records, streamlined medical logistics, and enhanced situational awareness for Army tactical forces.

## Army Equipment Program in Support of President's Budget 2017

- Procure Modular Fuel System Pump Rack Modules to Composite Support Companies to provide bulk fuel distribution and storage capability.
- Procure MSD-V3 to replace obsolete test sets.
- Procure NGATS to replace legacy Direct Support Electrical System Test Sets (DSESTS) and legacy Base Shop Test Facility (BSTF).
- Procure MTRCS to provide rapid refrigerated transport and storage of Class I items.
- Procure Compatible Water Tank Rack (HIPPO) to replace obsolete Semi-Trailer Mounted Fabric Tanks (SMFT) and Forward Area Water Point Supply System (FAWPSS) in Composite Supply Companies.
- Procure JPADS 10K in support of joint precision aerial delivery operations.
- Procure 5K LCRTF to replace legacy 4,000 pound forklifts throughout the Army
- Procure Type I, and Type II MWMSS to replace legacy systems to support SBCTs, IBCTs, and Engineer Forward Support Companies (FSC).
- Procure ARSS to support ABCTs, SBCTs, and IBCTs by providing on-system maintenance repairs to weapons as far forward as possible on the battlefield.
- Procure FSRS to provide the capability to refill the majority of fire suppression systems fielded to ABCTs, SBCTs, and Support Maintenance Companies (SMC).
- Procure Petroleum Quality Analysis System - Enhanced (PQAS-E) to provide a Fuel Storage Testing capability for Composite Supply Companies.

IV. Investment Strategy

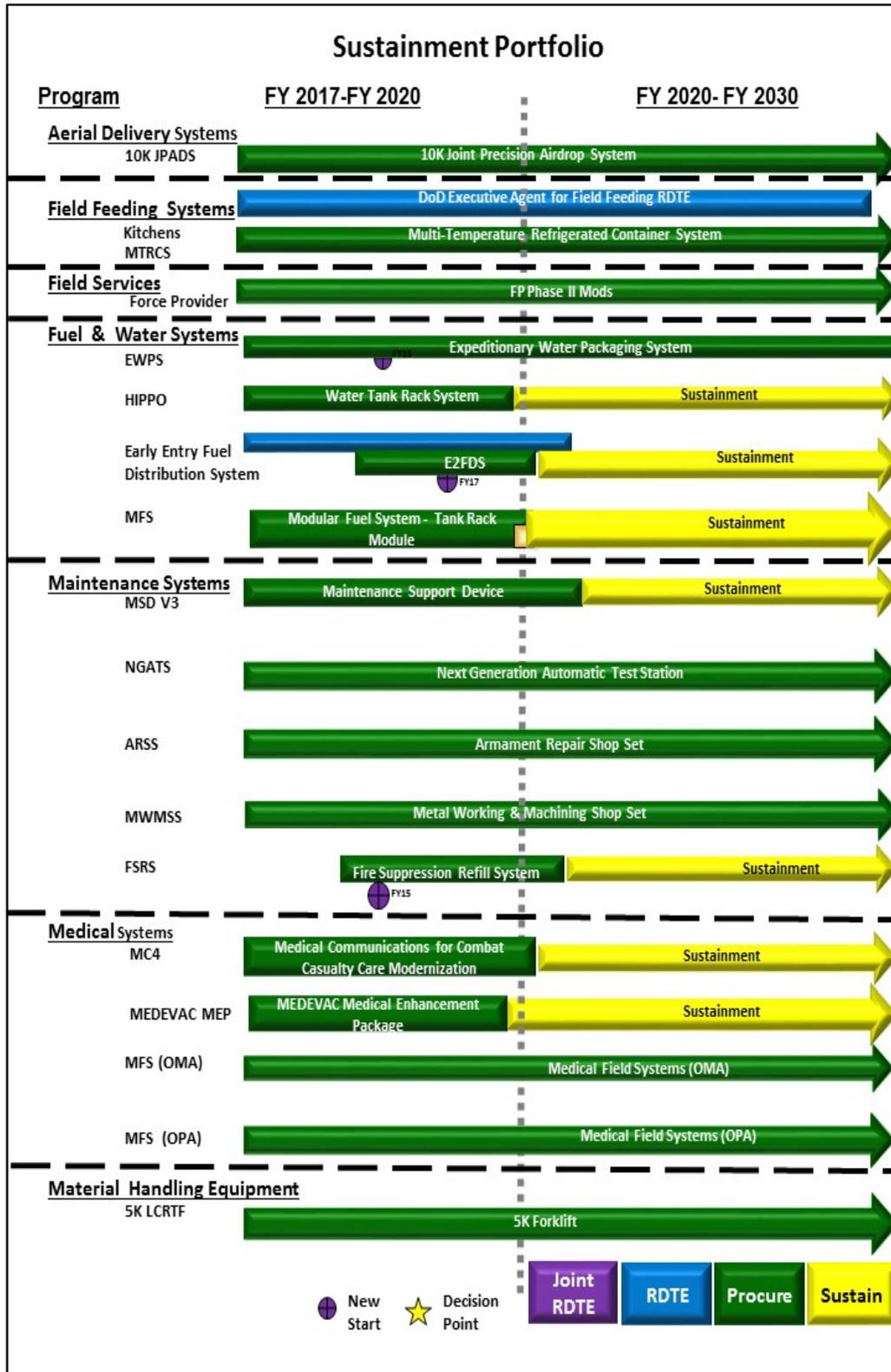


Figure 12. Sustainment (Service Support) Investment Strategy

## ***Science and Technology Program***

The Army Science & Technology (S&T) mission is to identify, develop, and demonstrate technology options that inform and enable effective and affordable capabilities for the Soldier. The Army S&T program balances investments between “revolutionary” and “evolutionary” research to improve performance of existing warfighting systems and provide new capabilities. The program is guided by and aligned to higher level Army, Department of Defense (DoD) and National strategies, and is informed by both current and emerging threats.

For Fiscal Year 2017, the Army will maintain the 2016 President's Budget level of S&T funding and will sustain or increase resources supporting the Office of the Secretary of Defense (OSD) areas in fundamental sciences. Examples include advanced materials and synthetic biology, research in the areas of human performance, robotics and autonomous systems, and advancing capabilities such as defense of ballistic and cruise missile, electronic warfare, and network defense.

The Army S&T program is organized into eight investment portfolios that address challenges across six Army-wide capability areas (Soldier/Squad; Air; Ground Maneuver; Command, Control, Communications, and Intelligence (C3I); Lethality; and Medical) and two S&T enabling areas (Basic Research and Innovation Enablers). The following are examples of major focus areas within the S&T Portfolios.

- The Joint Multi-Role Technology Demonstrator (JMR TD) S&T program is aligned with the Joint/DoD Future Vertical Lift (FVL) effort. The JMR TD S&T effort is exploring rotor systems, drives, propulsion systems, structures, platform configurations, mission systems architectures, and other associated technologies to support the FVL strategy.
- The High Energy Laser (HEL) Tactical Vehicle Demonstrator will demonstrate a mobile HEL integrated onto a Family of Medium Tactical Vehicle to defeat rocket, artillery and mortar, unmanned aerial vehicles, and intelligence, surveillance, and reconnaissance threats.
- The Modular Active Protection System (MAPS) program, initiated in FY 2015, is developing technologies to increase vehicle survivability and protection against current and emerging advanced threats. MAPS is focused on developing and demonstrating Active Protection utilizing a modular framework (A-kit) that will facilitate commonality across the Army's vehicles fleets, but with sensor and countermeasure sets (B-kit) tailored to each vehicle's assigned threats. The modular approach will help alleviate integration issues and costs across the military vehicle fleets and be upgradable as new Active Protection Systems (APS) components or threats emerge.

## Army Equipment Program in Support of President's Budget 2017

- The Assured Position, Navigation and Timing (A-PNT) process is developing technologies to provide Dismounted and Mounted Soldiers the capability to attain trusted Position, Navigation and Timing (PNT) information while operating in conditions that impede or deny access to the Global Positioning System (GPS). These technologies include GPS antennas for mounted platforms and dismounted Soldiers and pseudolite transceivers (an alternative source of GPS-like signals).
- Operations in Degraded Visual Environments (DVE) is the leading contributor to rotorcraft accidents and reduced operational effectiveness. The Army S&T DVE Mitigation (DVE-M) program seeks to combine multispectral sensor systems (sensors that cover a wide spectrum to include Ultra-Violet (UV), Infrared (IR) and Radio Frequencies (RF)), modernized flight control laws (algorithms that manage handling qualities of the aircraft), advanced cueing to enable pilotage in all degraded visual environments and weather conditions, and 360 degree situational awareness to aid pilot decision-making.
- The Extended Range Precision Fires (ERPF) program will demonstrate multi-purpose, scalable effects against point and/or area targets at extended ranges with greater precision in adverse conditions, to include anti-access, area denial and GPS-denied environments. The ERPF effort will develop propulsion technologies that enable target engagement at extended ranges while also developing a warhead that addresses both area and point targets for potential missile solutions. For enhanced cannon capability, ERPF is pursuing technologies to improve the cannon, gun mount and recoil mitigation, fully automatic compact autoloader/ammunition handling system, advanced common fire control with projectile tracking system, extended range projectiles, novel propelling charges, and a new cab/turret.
- Cyber S&T efforts are aligned to operational gaps identified in the cyber capability based assessment, TRADOC emerging doctrine and requirements, and the Army Cyber Materiel Development Strategy. Near-term defensive efforts focus on protection technologies that enhance resiliency, trust, and agility of tactical networks and information as well as addressing top tier threat actors. Near-term, offensive efforts focus on technologies that provide robust and scalable architectures and cyber geo-location. In FY 2017, S&T integrated software to the Army Brigade network provides holistic cyber situational awareness for assurance teams to assess the cyber battle space, detect/defend against known cyber weapons, and enable network adaptation.
- Electronic Warfare (EW) S&T efforts focus on designing countermeasures to address threats against Army rotorcraft, ground mounted platforms, and dismounted Soldiers. In addition, Army S&T is developing architectures to de-conflict sensing and response between EW and cyber assets in the battlespace.

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- The Combat Vehicle Prototyping (CVP) Program, initiated in FY 2015, matures technologies to address technical and integration challenges facing the ground combat fleet in the areas of mobility, survivability, lethality, and vehicle architecture. CVP focuses on maturation and demonstration of technologies such as engines, transmissions, integrated starter generators, ballistic protection, blast mitigation, advanced material technologies, lethality subsystems, and advanced fire controls.
- A key component of the S&T strategy is broadening and deepening our ability to identify, understand, and eliminate potential vulnerabilities in emerging technologies and future systems that could threaten their success upon deployment in Army operational settings. To achieve this, the S&T Red Teaming investment provides in-depth, independent assessments of emerging technologies across laboratory, table-top, and live field environments. These assessments seek to uncover potential vulnerabilities of future Army systems when employed in a system of systems context and against an evolving and responsive threat.
- In Basic Research in FY 2017, we will invest in high-payoff research and seek ways to exploit these advances for the Soldier, including investments to understand advanced novel materials, individualized Soldier systems, cyber security, and intelligent autonomous systems. One new emerging focus area for Army S&T is Quantum Effects. Here we are pursuing the exploitation of unique quantum properties to design viable mobile and secure quantum networks that enable ultra-precise sensors and imaging. For the Army, techniques like entangled photon key distribution and information teleportation have an impact that is pervasive and profound, including: enhanced, jam-proof position and navigation, quantum computing, advanced and novel sensing, and secure communications. The expected payoff is anywhere from 5 to 50 years, depending on which research topic area is under discussion.

These efforts will provide an opportunity to invest in innovative and potentially disruptive research. Prototyping the most promising innovative technologies not only demonstrates potential payoff, it keeps Army expertise focused on developing affordable and achievable capabilities while informing our long-range planning process to identify future transition opportunities.

As the Army S&T program continues to identify and harvest technologies suitable for transition to our force, we aim to remain ever vigilant of potential and emerging threats. We are implementing a strategic approach that includes an awareness of existing and potential gaps; a look at global technology development; an understanding of emerging threats; knowledge of state-of-the-art commercial, academic and Government research; as well as a clear understanding of competing needs for limited resources.

## ***Glossary***

2CR	2nd Cavalry Regiment
A2/AD	Anti-Access/Area Denial
AoA	Analysis of Alternatives
ABCT	Armored Brigade Combat Team
AC	Active Component
ACRB	Advanced Chinook Rotor Blades
ACWS	Army Contract Writing System
AEP PB 17	Army Equipment Program in Support of President's Budget FY 2017
AH	Attack Helicopter
AHD	Acoustic Hailing Device
AK	Assault Kitchen
AMCUA	Army Mission Command for Unified Action
AMD	Air and Missile Defense
AMDAS	Advanced Miniaturized Data Acquisition System
AMDPCS	Air and Missile Defense Planning and Control System
AMMPS	Advanced Medium-sized Mobile Power Systems
AMPV	Armored Multi-Purpose Vehicle
AOC	<i>Army Operating Concept</i>
A-PNT	Assured Position, Navigation, & Timing
APS	Active Protection Systems
ARI	Aviation Restructure Initiative
ARL-E	Airborne Reconnaissance Low-Enhanced
ARNG	Army National Guard
ARSS	Armament Repair Shop Set
ATACMS	Army Tactical Missile System
AWS	Army Watercraft Systems
BCT	Brigade Combat Team
BEB	Bridge Erection Boats
BEST	Black Hawk Exchange Sales Transaction
BMD	Ballistic Missile Defense
BPS	Ballistic Protection System
BSTF	Base Shop Test Facility
C2/SA	Command and Control/Situational Awareness
C3I	Command, Control, Communications, and Intelligence
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance
CBPS	Chemical Biological Protective Shelter

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CBRNE	Chemical, Biological, Radiological, Nuclear and Explosives
CCD	Camouflage, Concealment, Deception
CEH	Counter Explosive Hazard
CI	Counterintelligence
CIRCM	Common Infrared Countermeasure
CMD	Cruise Missile Defense
CMWS	Common Missile Warning System
CPD	Capability Production Document
COE	Common Operating Environment
COMSEC	Communication Security
COOLS	Cargo On/Off Loading System
COTS	Commercial Off The Shelf
CP	Command Post
CP CE	Command Post Computing Environment
CPR	Capability Portfolio Review
C-RAM	Counter- Rockets, Artillery and Mortars
CRE	CBRNE Response Enterprise
CRS-I	Common Robotic System-Individual
CS	Capability Set
CSA	Chief of Staff, Army
CSP	Common Sensor Payload
CTE	Container Transfer Enhancement
CUAS	Counter Unmanned Aerial System
CVP	Combat Vehicle Prototyping
DCGS-A	Distributed Common Ground System-Army
DCO	Defensive Cyber Operations
DoD	Department of Defense
DSESTS	Direct Support Electrical System Test Sets
DVE	Degraded Visual Environment
DVH	Double-V-Hull
DVE-M	DVE-Mitigation
ECP	Engineering Change Proposal
EDA	Excess Defense Articles
EMARSS	Enhanced Medium Altitude Reconnaissance and Surveillance System
EMC2	Enroute Mission Command and Control
EMD	Engineering, Manufacturing, and Development
EOD	Explosive Ordnance Disposal
EPLRS	Enhanced Position Location Reporting System
ERPF	Extended Range Precision Fires

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EUL	Economic Useful Life
EW	Electronic Warfare
EWPMPT	Electronic Warfare Planning and Management Tool
EWPS	Expeditionary Water Packaging System
FAWPSS	Forward Area Water Point Supply System
FDU	Force Design Update
FFV	Future Fighting Vehicle
FHTV	Family of Heavy Tactical Vehicles
FLIR	Forward Looking Infrared
FMS	Foreign Military Sales
FMTV	Family of Medium Tactical Vehicles
FMV	Full Motion Video
FSC	Forward Support Companies
FSRS	Fire Suppression Refill Systems
FUA	Fixed-wing Utility Aircraft
FVL	Future Vertical Lift
FY	Fiscal Year
GCCS-A	Global Command and Control System- Army
GCSS-A	Global Combat Support System- Army
GEOINT	Geospatial Intelligence
GFEB	General Fund Enterprise Business Systems
GMLRS-AW	Guided Multiple Launch Rocket System- Alternate Warhead
GMV	Ground Mobility Vehicle
GOTS	Government Off The Shelf
GPS	Global Positioning System
GRCS	Guardrail Common Sensor
GRF	Global Response Force
HEL	High Energy Laser
HIMARS	High Mobility Artillery Rocket System
HIPPO	Compatible Water Tank Rack
HMS	Handheld, Manpack, and Small Form Fits
HMMWV	High Mobility Multipurpose Wheeled Vehicle
HQDA	Headquarters, Department of the Army
HUMINT	Human Intelligence
IAMD	Integrated Air Missile Defense
IBCS	Integrated Air and Missile Battle Command System
IBCT	Infantry Brigade Combat Team
ICS	Interim Contractor Support
IEW	Intelligence and Electronic Warfare

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IFCN	Integrated Fire Control Network
IFLIR	Improved Forward Looking Infrared
IFPC	Indirect Fire Protection Capability
IOC	Initial Operating Capability
IPPS-A	Integrated Personnel and Pay System-Army
IR	Infrared
ISR	Intelligence, Surveillance, & Reconnaissance
ITE	Improved Turbine Engine
ITEP	Improved Turbine Engine Program
JAGM	Joint Air-to-Ground Missile
JBC-P	Joint Battle Command-Platform
JETS	Joint Effects Targeting System
JIE	Joint Information Environment
JLTV	Joint Light Tactical Vehicle
JMR TD	Joint Multi-Role Technology Demonstrator
JPADS	Joint Precision Airdrop Systems
KECDP	Kits for Evidence Collection and Detainee Processing
LCM	Landing Craft Mechanized
LCRTF	Light Capacity Rough Terrain Forklift
LCU	Landing Craft Utility
LEUT	Light Engineer Utility Trailer
LIRA	Long-range Investments Requirements Analysis
LLDR	Lightweight Laser Designator Rangefinder
LPWS	Land-based Phalanx Weapon System
LOC	Lines of Communication
LRIP	Low-Rate Initial Production
LRPF	Long Range Precision Fires
LRV	Light Reconnaissance Vehicle
LTAMD	Lower Tier Air and Missile Defense
LUH	Light Utility Helicopter
LWN	LandWarNet
MAPS	Modular Active Protection System
MC4	Medical Communication for Combat Casualty Care
MCE	Mounted Computed Environment
MDSA	Modernized Day Sensor Assemblies
MEDEVAC	Medical Evacuation
MFEW	Multi-Function Electronic Warfare
MFRI	Modernized Radio Frequency Interferometers
MFS	Modular Fuel System

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MLRS	Multiple Launch Rocket System
MML	Multi-Mission Launchers
MNVR	Mid-Tier Networking Vehicular Radio
MPF	Mobile Protected Firepower
MRAP	Mine Resistant Ambush Protected vehicle
MRBM	Medium Range Ballistic Missiles
MSD-V3	Maintenance Support Device-Version 3
MSE	Missile Segment Enhancement
MSV-L	Maneuver Support Vessel-Light
MTRS	Man-Transportable Robotic System
MTRCS	Multi-Temperature Refrigerated Container System
MWMSS	Metal Working and Machining Shop Set
MYC	Multi-Year Contract
NBCRV	Nuclear, Biological, Chemical Reconnaissance Vehicle
NetOps	Network Operations
NGATS	Next Generation Automatic Test System
NIE	Network Integration Evaluation
ONS	Operational Needs Statement
OPA	Other Procurement, Army
OPTEMPO	Operations Tempo
OSD	Office of the Secretary of Defense
OSHA	Office of Safety and Health Administration
OTAR	Over The Air Reprogramming
PBUSE	Property Book Unit Supply Enhanced
PDISE	Power, Distribution, Illumination, System, and Electrical
PDR	Preliminary Design Review
PED	Processing, Exploitation, and Dissemination
PFCS	Paladin Fire Control System
PGK	Precision Guidance Kit
PIM	Paladin Integrated Management
PLS	Palletized Load System
PLST	Palletized Load System Trailers
PNT	Position, Navigation, & Timing
POM	Program Objective Memorandum
PoR	Program of Record
PPBE	Planning, Programing, Budgeting, Execution
PPE	Personal Protective Equipment
PQAS-E	Petroleum Quality Analysis System-Enhanced
QRC	Quick Reaction Capability

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RAM	Rockets, Artillery, and Mortars
RAS	Robotics and Autonomous Systems
RDA	Research, Development, & Acquisition
RDT&E	Research, Development, Testing, & Evaluation
RF	Radio Frequencies
RSTA	Reconnaissance, Surveillance and Target Acquisition
RSW-J	Remote Weapon System- Javelin
S&T	Science and Technology
SAMS	Standard Army Maintenance System
SAP	Solutions Applications Products Inc.
SBCT	Stryker Brigade Combat Team
SIGINT	Signals Intelligence
SLEP	Service Life Extension Program
SMC	Support Maintenance Companies
SMFT	Semi-Trailer Mounted Fabric Tanks
SOF	Special Operation Forces
SPIRIT	Special Purpose Integrated Remote Intelligence Terminal
STARLite	Small Tactical Radar-Lightweight
SW	Software
SWaP-C	Size, Weight, Power & Cost
TBM	Theater Ballistic Missiles
TENCAP	Tactical Exploitation of National Capabilities
THAAD	Theater High Altitude Air Defense
TOW	Tube-launched, Optically-tracked, Wire-guided missile
TRADOC	Training and Doctrine Command
TSI	Tactical Server Infrastructure
TSP	Tactical SIGINT Payloads
TS/SCI	Top Secret/Sensitive Compartmented Intelligence
TWV	Tactical Wheeled Vehicles
UAS	Unmanned Aircraft Systems
UH	Utility Helicopter
UV	Ultra-Violet
WIN-T	Warfighter Information Network-Tactical

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