The PEO Missiles and Space provides centralized management for all Army air and missile defense and tactical missile programs as well as selected Army space programs. The PEO is responsible for the full life-cycle management of assigned programs.

The PEO Missiles and Space reports to the Army Acquisition Executive and is aligned with the Aviation and Missile Life Cycle Management Command at Redstone Arsenal, Ala. This materiel enterprise relationship enhances the PEO's ability to provide the world's finest support to our Army, joint service, interagency, and coalition warfighters and customers while continuing the Army's modernization.

The portfolio of programs assigned to the PEO Missiles and Space spans the full spectrum of the acquisition process from system development to acquisition, testing, production, product improvement, fielding, sustainment and eventual retirement from the force. A number of programs are joint programs being developed with the other services. Two programs within the PEO are international cooperative development programs, with other countries sharing in the development as full partners.

In addition to specific acquisition programs, the PEO is applying a system-of-systems acquisition approach to meet warfighters' needs and obtain the desired capabilities of the Army Air and Missile Defense (AMD) Future Force. This approach requires the systems to be restructured into components of sensors, launchers, missiles, and Battle Management Command, Control, Communications, Computers and Intelligence (BMC^{4}I), utilizing a standard set of interfaces and networks to communicate. The Army's Integrated Air and Missile Defense (IAMD) acquisition approach will ensure that the materiel solutions for the Army's AMD Future Force will provide the capabilities required by the warfighter.

Joint Attack Munition Systems (JAMS)

The Joint Attack Munition Systems (JAMS) Project Office manages all Army aviation rockets and missiles. The current programs include the 2.75-inch Hydra 70 family of rockets, the Hellfire family of missiles and the Joint Air-to-Ground Missile (JAGM).

The **2.75-inch (70 mm) Hydra 70 Rocket Family** encompasses variants of the free-flight rocket that has become the standard ground-attack rocket. The design includes multiple warheads that can be used on the rocket motor.

Rockets equipped with various fuzes and warhead options include: M261 tactical, M267 practice, M151 (10-pound) antipersonnel or canopy/soft bunker, M229 antipersonnel (17-pound), M274 smoke signature, M257 illumination, M264 smoke, M255A1 flechette, and M278 infrared illuminating.

The **AGM-114 Hellfire Missile Family** includes the Hellfire II and Longbow Hellfire missiles. **Hellfire II** is a precision-strike, semi-active laser (SAL)-guided missile and is the principal air-to-ground weapon for the Army AH-64 Apache, the U.S. Marine Corps AH-1W Super Cobra and the U.S. Air Force Predator unmanned aircraft system (UAS).

The SAL Hellfire II guides using laser energy reflected off the target. It has three warhead variants: a dual warhead, shaped-charge high-explosive antitank (HEAT) for armored threats (AGM-114K); a blast-fragmentation warhead (BFWH) for urban, patrol boat and other "soft" targets (AGM-114M); and a metal augmented charge (MAC) warhead (AGM-114N) for urban structures, bunkers, radar and communications installations, and bridges.

In 2012, a multipurpose missile (AGM-114R) began delivery, which allows the pilot to select warhead effects corresponding to the target. UAS or rotary-wing platforms can deliver the AGM-114R.

The Longbow Hellfire (AGM-114L) is also a precision-strike missile, but uses millimeter wave (MMW) radar guidance instead of Hellfire II's SAL. It is the principal antitank system for the AH-64D Apache Longbow and uses the same antiarmor warhead as Hellfire II. The MMW seeker provides beyond-line-of-sight fire-and-forget capability as well as the ability to operate in adverse weather and battlefield obscurants.

During Operation Desert Storm, the Hellfire earned a reputation for being one of the military's most formidable tank killers. Its multimission capabilities were successfully demonstrated in combat against a wide variety of targets, including radar installations, communications posts, bunkers, buildings, antiaircraft emplacements, oil rigs and bridges. Hellfire missiles were used extensively in Operation Iraqi Freedom (OIF) and are in continued use in Operation Enduring Freedom (OEF). The Longbow Hellfire missile was used successfully in combat for the first time during OIF.

The **Joint Air-to-Ground Missile (JAGM)** program will provide a rotary-wing, fixed-wing and unmanned aerial vehicle (UAV)-launched missile system that provides line-of-sight capabilities, including precision point targeting (both active and passive) and fire-and-forget seeker technologies; increased range; and increased lethality against soft and hardened moving and stationary targets. When fielded, the JAGM will replace aviation-launched TOW, the Hellfire family of missiles and the Navy's Maverick family of missiles. The JAGM will increase the warfighter's operational flexibility by effectively engaging a variety of stationary and mobile targets on the battlefield, including advanced heavy/light armored vehicles, bunkers, buildings, patrol craft, command-and-control vehicles, transporter/erector launchers, artillery systems and radar/air defense systems. Its multimode seeker will provide robust capability in adverse weather, day or night, and in an obscured/countermeasure environment, against both stationary and moving targets.

A Hellfire Missile is loaded onto an AH-64D Apache helicopter.

Cruise Missile Defense Systems (CMDS)

The CMDS Project Office is equipping the transformation of the current force maneuver air and missile defense capability into an integrated air and missile defense capability.

Programs include **Stinger-based Avenger and Manportable Air Defense System**

(MANPADS), the Sentinel radar and the **Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS)**.

Stinger-based Avenger and **MANPADS** provide the only air defense weapon currently in the forward area through Stinger, a fire-and-forget infrared/ultraviolet (IR/UV) missile system. Stinger-based Avenger is highly mobile and provides shoot-on-the-move capabilities in day, night, and adverse weather operations, and is designed to counter hostile, low-flying unmanned aerial vehicles (UAVs), cruise missiles, rotary-wing aircraft and high-performance fixed-wing aircraft.

Stinger provides low-altitude defense for ground forces against aerial observation or attack by smaller threat aircraft. Stinger missiles have extensive counter-countermeasure capabilities, can engage targets from any aspect including head-on, and utilize a high-explosive, hit-to-kill warhead.

The **AN/MPQ-64 Sentinel** is an advanced, three dimensional, battlefield X-band air defense phased-array radar with an acquisition range of 40 kilometers. Sentinel transmits its radar imagery to the forward area air defense command and control (FAAD C^2) via radio frequency link. Sentinel is being upgraded to the improved Sentinel configuration that doubles its range and will integrate with future AMD BMC^4I via SLAMRAAM.

Stinger-based Avenger mounted on a Humvee

The **Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS)** uses advanced sensor and networking technologies to provide 360-degree, wide-area surveillance and precision tracking of land attack cruise missiles. JLENS detects stressing, terrain-masked cruise missiles and other air-breathing threats, permitting extended engagement ranges for current air defense systems.

Lower Tier Project Office

The Lower Tier Project Office consists of the Patriot, PAC-3 and Joint Tactical Ground Station (JTAGS).

The **Patriot Missile System** provides defense of critical assets and maneuver forces belonging to corps and to echelons above corps against aircraft, cruise missiles and tactical ballistic missiles (TBMs). The PAC-2 system upgrade, modified PAC-2 guidance

enhancement missiles (GEM) and the PAC-3 missile provide the Patriot missile system with an advanced antitactical missile capability. The combat element of the Patriot missile system is the fire unit, which consists of a phased-array radar set (RS), an engagement control station (ECS), an electric power plant, an antenna mast group, a communications relay group and up to eight remotely located launching stations (LSs).

The RS provides all tactical functions of airspace surveillance, target detection and tracking, and missile guidance and engagement support. The ECS provides the human interface for command and control of operations. Each LS contains four ready-to-fire missiles sealed in canisters that serve as both shipping containers and launch tubes. The Patriot's fast-reaction capability, high firepower and ability to track numerous targets simultaneously and operate in a severe electronic countermeasures environment are significant improvements over previous air defense systems.

The **Patriot Advanced Capability-3 (PAC-3)** missile program incorporates significant upgrades to the RS and ECS and the battle-proven PAC-3 missile, which uses hit-to-kill technology for greater lethality against TBMs armed with weapons of mass destruction. The PAC-3 missile is the first operationally deployed hit-to-kill weapon system capable of defeating all known air and missile defense threats. In addition, it is possible to have up to 16 PAC-3 missiles per launcher, thereby increasing firepower and missile defense capabilities. The PAC-3 missile's primary mission is to kill maneuvering and nonmaneuvering TBMs while remaining able to counter advanced cruise missiles and aircraft. The PAC-3 missile upgrade program adds system improvements to increase performance against an evolving threat, meets user needs and enhances joint interoperability.

The **Joint Tactical Ground Station (JTAGS)** is a transportable information processing system that supports combatant commanders and forward-deployed forces with early warning data on ballistic missile launches.

The Missile Defense Agency-managed **Terminal High Altitude Area Defense (THAAD)** system, a critical element of the ballistic missile defense system (BMDS), will provide rapidly deployable ground-based missile defense components that deepen, extend and complement the BMDS to any combatant commander to defeat ballistic missiles of all types and ranges while in all phases of flight.

THAAD's combination of high-altitude, long-range capability and hit-to-kill lethality enables it to negate the effects of weapons of mass destruction at intercept ranges well beyond the defended area. These attributes, along with THAAD's unique endo- and exo-atmospheric capability, enlarge the battlespace to allow multiple intercept opportunities in both the late-midcourse and terminal phases of ballistic missile trajectories. THAAD can accept cues from Aegis, satellites and other external sensors to further extend the battlespace and defended area coverage. THAAD will operate in concert with the lower-tier Patriot/PAC-3 missile system to provide increased levels of effectiveness.

THAAD is a rapid-response weapon system that can be deployed quickly to protect critical assets worldwide. The THAAD element consists of five major components: missiles; launchers; radars; command, control, battle management and communications (C^2BMC); and THAAD-specific support equipment. All components were successfully integrated, tested and demonstrated during the first program phase that concluded in 2000.

The THAAD development program flight testing resumed in 2005 with the first 15 flight tests. In May 2006, Lockheed Martin and the U.S. Missile Defense Agency successfully conducted the first developmental flight test to engage the entire THAAD weapon system, including THAAD interceptor, launcher, radar and fire-control system. Following repeated flight test successes, the U.S. Army "stood up" the first of four planned THAAD firing batteries at Fort Bliss, Texas, in mid-2008.

Lockheed Martin

Patriot Advanced Capability-3 (PAC-3) missile

Close Combat Weapon Systems (CCWS)

The Close Combat Weapon Systems (CCWS) Project Office manages a range of antiarmor missile and target acquisition systems. Current programs include the tube-launched, optically tracked, wire-guided (TOW 2)/TOW 2A/TOW 2B, Javelin, improved target acquisition system (ITAS) and Improved Bradley Acquisition System (IBAS). The office is also coordinating preliminary work on future TOW missile improvements.

The **BGM-71 Tube-launched, Optically Tracked, Wire-guided (TOW) Missile System**, with the multimission TOW 2A, TOW 2B, TOW 2B Aero and TOW bunker buster missile, is a long-range, multimission, precision-attack weapon system used throughout the world today. TOW is in service in more than 40 international armed forces and integrated on more than 15,000 ground, vehicle and helicopter platforms worldwide. TOW is also the preferred heavy assault weapon system for NATO, coalition, United Nations and peacekeeping operations worldwide. The TOW 2A, TOW 2B, TOW 2B Aero and TOW bunker buster missiles can be fired from all TOW launchers, including the improved target acquisition systems, Stryker antitank guided missile (ATGM) vehicle (modified ITAS), and Bradley fighting vehicles (IBAS).

The Improved Target Acquisition System includes a second-generation FLIR that uses standard advanced dewar assembly (SADA II) technology, an eyesafe laser rangefinder. The TOW ITAS provides a highly mobile, adverse weather, day-or-night capability needed by early entry forces to destroy advanced threat armor at greater standoff ranges in the main battle area. The ITAS features an automatic boresighting capability, aided target tracking, embedded training, BIT/BITE and traversing unit modifications. These features ensure crew survivability through increased standoff range and improved performance in the battlefield environment.

The TOW weapon system, with its ex-

tended-range performance, is the long-range precision heavy antitank/assault missile of choice for the U.S. Army Stryker, Bradley, ITAS-Humvee platforms and the U.S. Marine Corps Humvee, light armored vehicle and AH-1W Cobra platforms. In addition, it can be operated in a dismounted ground mode.

The TOW weapon system entered its production and deployment phase in 1970. Since then, multiple variations of the missile and launcher systems have been fielded.

Recent developments include the development of the bunker buster missile for use by the Stryker brigade combat teams and the introduction of the TOW 2B Aero, an extended-range (4.5-kilometer) version of the TOW 2B missile. Future improvements will include replacing the wire guidance system with a wireless radio frequency (RF) guidance system.

The **Javelin** is a shoulder-launched, fire-and-forget, manportable, antiarmor and assault weapon system optimized for attacking and destroying armored tank targets, buildings, bunkers and hovering helicopters. It replaces the Dragon antiarmor missile system, providing a medium-range multipurpose capability for infantry, scouts and combat engineers. The system is lethal against tanks with conventional and reactive armor and against a variety of other targets.

Javelin missile

Javelin has been used very successfully in Iraq and Afghanistan to defeat armored targets, bunkers and hard-to-reach targets in urban terrain, without endangering friendly forces or noncombatants.

Javelin has two major tactical components: a reusable command launch unit (CLU) and a missile sealed in a disposable launch tube assembly.

The CLU is a compact, lightweight, target-acquisition device incorporating an integrated day/second-generation thermal sight, launch controls and a gunner's eyepiece display. It provides target engagement capability in adverse weather and countermeasure environments. The CLU may also be used in the stand-alone mode for battlefield surveillance and target detection; this has proven effective both in Afghanistan and Iraq.

The missile is 127 mm in diameter with a staring, imaging infrared seeker; a feature-based tracker; a lethal warhead; dual in-line eject; a solid-propellant flight motor; gunner-selected direct-attack or top-attack engagement guidance options; and the Javelin launch tube assembly, an expendable handling launch tube to house the missile, power pack attachment and CLU interface. The complete round is described as "wooden," as it requires no pre-use testing or maintenance. Its shelf life is 10 years.

The Javelin system weighs 49 pounds, and its maximum range is more than 2,500 meters (minimum operational range is 65 meters). Javelin's key technical feature is the use of fire-and-forget technology that allows the gunner to fire and immediately take cover. Additional special features are the top-attack and direct-fire modes (for targets under cover), advanced tandem warhead, imaging infrared seeker, target lock-on before launch and soft launch. Soft launch allows Javelin to be fired safely from enclosures and covered fighting positions, increasing gunner survivability. The time required to prepare Javelin for firing is less than 30 seconds, with a reload time of less than 20 seconds.

Precision Fires Rocket and Missile Systems

The Precision Fires Rocket and Missile Systems (PFRMS) Project Office manages the multiple launch rocket system (MLRS) family of launchers, including the M270A1 and High-Mobility Artillery Rocket System (HIMARS) as well as the entire suite of rockets and missiles for those launchers. The MLRS family of munitions includes the basic, extended-range and guided MLRS rockets as well as the Block I/IA and unitary Army Tactical Missile System (ATACMS).

The **M270A1 Multiple Launch Rocket System (MLRS)** is a highly mobile, automated system that fires surface-to-surface rockets and missiles from a tracked platform derived from the same chassis used by the Bradley fighting vehicle. The MLRS delivers large volumes of firepower in a short time against critical, time-sensitive targets. From inside the cab, the crew of three can fire up to 12 MLRS rockets. The basic rocket warhead carries dual-purpose, improved conventional munition submunitions. MLRS, however, is capable of supporting and delivering all of the MLRS family of munitions (MFOM), including the Army tactical missile system (ATACMS) variants.

The **M142 High Mobility Artillery Rocket System (HIMARS) Launcher** is the newest launcher variant of the MLRS family.

HIMARS is a highly mobile artillery rocket system offering MLRS firepower on a wheeled chassis and is C-130 transportable.

HIMARS carries a single six-pack of MLRS rockets, or one Army tactical missile system (ATACMS) missile, on the Army's new family of medium tactical vehicles (FMTV) 5-ton truck. HIMARS is designed to launch the entire MLRS family of munitions. A platoon of HIMARS advanced concept technology demonstration prototypes were successfully used during OIF, exclusively firing ATACMS missiles in support of ground forces.

The MFOM munition systems have proven to be highly effective and reliable during combat operations.

The **ATACMS Blocks I and IA Missiles** provide long-range, surface-to-surface fire support for Army corps and division operations. Both ATACMS Blocks I and IA are surface-to-surface guided missile systems with antipersonnel/antimateriel (APAM) warheads.

The ATACMS with an APAM warhead attacks soft-area targets at ranges well beyond the capability of existing cannons and rockets. Targets include surface-to-surface missile and multiple rocket launcher units; air defense systems; logistics elements; and command, control and communications complexes.

High Mobility Artillery Rocket System (HIMARS)

Lockheed Martin

The ATACMS Block IA, with enhanced accuracy enabled by GPS augmentation to its inertial guidance capability, has a 300-kilometer reach.

Block IA began fielding in FY 1998, and retrofit of selected launchers to Block IA capability occurred simultaneously with missile fielding. Fired from M270A1 and HIMARS launchers, it was highly effective in OIF.

The **ATACMS Unitary Missile** is a U.S. Army requirement developed from lessons learned in Kosovo. It was clear that battlefield commanders needed a weapon with precise guidance and lower lethal radii to minimize collateral damage.

The **Army TACMS Quick-Reaction Unitary (QRU) Missile** is a responsive all-weather, long-range missile with a high-explosive, single-burst warhead fired from the multiple-launch rocket system family of launchers.

The Army TACMS QRU is converted to the unitary configuration by replacing the antipersonnel/antimateriel (APAM) submunitions in Block IA missiles and integrating a proven government-furnished unitary warhead (470-pound SLAM/HARPOON) and fuze into the warhead section.

The missile has a range of 270 kilometers and provides the Army the interim capability to attack high-payoff, time-sensitive targets without placing combat or support aircraft and crews at risk.

Its precision accuracy, the absence of potential submunition duds and reduced lethal radii overcome collateral damage concerns.

The Army TACMS QRU was used effectively in OIF and continues to be highly effective in destroying high-payoff targets in OEF.

The Army TACMS QRU evolved into the TACMS 2000 (T2K) variant with upgraded vertical impact capability to minimize target altitude error. This vertical impact capability maximizes warhead effects in complex urban and mountain terrain.

The **Extended-Range Multiple Launch Rocket System (ER-MLRS)**, which extends the 31.8-kilometer range of the basic rocket to approximately 45 kilometers, provides longer-range rocket capability. The program emerged from lessons learned during Operation Desert Storm, in which senior-level commanders, while applauding the effectiveness of the basic rocket, stated a requirement for greater range. The ER-MLRS is a free-flight, area-fire artillery rocket designed to enhance the capabilities of the MLRS.

The **Guided Multiple Launch Rocket System (GMLRS)** supports Army transformation with increased overmatch capabilities and a reduced logistics footprint over current free-flight rockets. GMLRS is used with the M270A1 and the HIMARS launchers.

The rockets incorporate GPS-aided inertial navigation systems.

A second GMLRS variant is the **GMLRS Unitary.** GMLRS unitary integrates a 200-pound class unitary warhead into the GMLRS. This munition has a range up to 70 kilometers and is effective against multiple targets. Its multimode warhead fuze (impact, delay and airburst) greatly enhances its employment options against many types of targets in various combat environments.

The GMLRS unitary proved its effectiveness in OIF and has become the indirect-fire weapon of choice in urban areas.

GMLRS Alternative Warhead (AW)

The GMLRS AW program will replace the GMLRS DPICM with the mission to attack, neutralize, suppress and destroy targets using rocket-delivered indirect precision fires while decreasing the probability of unexploded ordnance.

GMLRS AW provides field artillery units with medium- and long-range fires while supporting brigade, division, corps, Army, theater, joint/coalition forces and Marine Corps air-ground task forces in full, limited or expeditionary operations.

The GMLRS AW rocket is a solid propellant artillery rocket deployed from either the M270A1 or HIMARS.

GMLRS AW uses an inertial measuring unit (IMU) with global positioning system assistance to guide the rocket to a specific point to deliver effects on a target. GMLRS AW is transported and fired from a launch pod container (LPC) that holds six rockets.

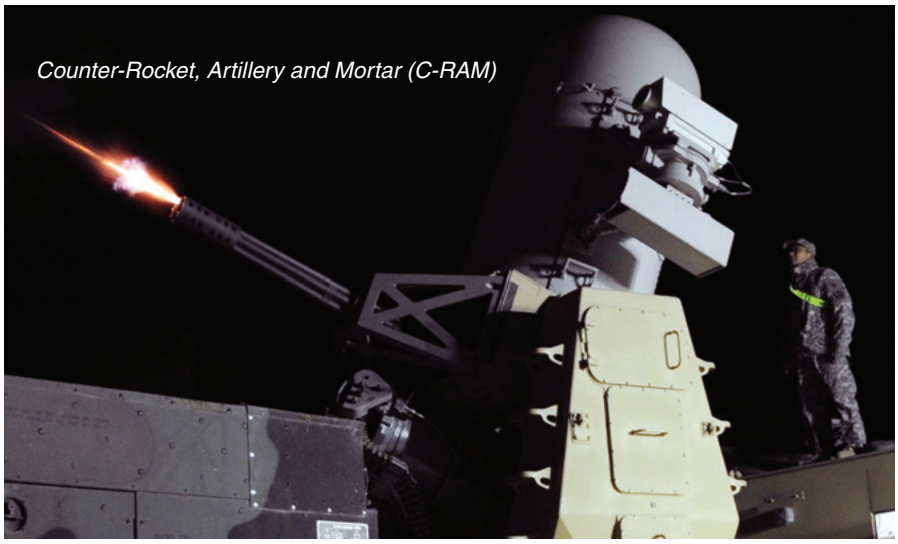
Integrated Air and Missile Defense (IAMD)

In addition to the efforts of its "weapon system" project offices, the PEO Missiles and Space is applying a system-of-systems acquisition approach to meet warfighter requirements and obtain the desired capabilities of the Army Air and Missile Defense Future Force. This approach calls for a restructuring of systems into components of sensors, weapons and Battle Management C^4I with a standard set of interfaces among the components, using a standard set of networks for communication. The Army's Integrated Air and Missile Defense acquisition approach significantly affects the PEO strategy for materiel development and systems acquisition.

The **Counter-Rocket, Artillery and Mortar (C-RAM)**, also referred to as **Indirect Fire Protection Capability (IFPC) Increment 0**, is an evolutionary, nondevelopmental program initiated by the Army Chief of Staff in response to the indirect fire (IDF) threat and a validated operational needs statement. The primary mission of the C-RAM program is to develop, procure, field and maintain a system of systems (SoS) that can detect RAM launches; provide localized warning to the defended area with sufficient time for personnel to take appropriate action; intercept rounds in flight, thus preventing damage to ground forces or facilities; and enhance response to and defeat of enemy forces. The current C-RAM SoS is composed of a combination of multiservice fielded and nondevelopmental item (NDI) sensors, mission command systems, and a modified U.S. Navy intercept system (land-based phalanx weapon system [LPWS]), with a low-cost, commercial off-the-shelf (COTS) warning system and local area network (LAN). The C-RAM SoS capability is currently fielded at multiple sites in two theaters of operation, providing correlated air and ground pictures and linking units to the Army Battle Command System (ABCS) and the Joint Defense Network (JDN), with various forms of communications to provide situational awareness and exchange of timely and accurate information to synchronize and optimize automated shape, sense, warn, intercept, respond and protect decisions.

The currently fielded capability uses existing field artillery and air defense sensors (AN/TPQ-36/37 Firefinder, Lightweight Counter Mortar Radar (LCMR), and Sentinel), a commercial-industry-produced warning system (Wireless Audio Visual Emergency System [WAVES]), LPWS,

Guided Multiple Launch Rocket System (GMLRS)



Counter-Rocket, Artillery and Mortar (C-RAM)

U.S. Air Force

and U.S. Air Force base defense security systems. It is tied to various response systems via the U.S. Air Force, U.S. Marine Corps and ABCS. The Forward Area Air Defense Command and Control (FAAD C2) system, also under the management of the C-RAM Program Directorate, has been enhanced to integrate the sensors, weapons and warning systems to provide command and control for the C-RAM SoS. C-RAM C2 software correlates RAM sensor data, evaluates that threat, provides early warning, directs engagements and cues counter-fire systems and reaction forces. The C-RAM SoS has been fielded to forward operating bases (FOBs) in Iraq and Afghanistan. Sense and warn (S&W) performance has been extremely successful, providing timely warning for more than 2,000 rocket and mortar attacks against C-RAM FOBs, with a minimum of false warnings, saving countless lives. In addition, intercept systems achieved more than 160 successful intercepts of rockets and mortar rounds fired at high-value U.S. Forces-Iraq assets. Current, operational needs statement-based capability enhancements include an improved radar for detection of high/low quadrant elevation (QE) threats, a mobile up-gun LPWS for improved mobility and extended range, integration of military spectrum communications, integration with unmanned aerial systems (UAS) universal ground station (UGS), and dynamic clearance of fires. Following the drawdown of efforts in Iraq, C-RAM sense-and-warn assets began supporting State Department and Office of Security Cooperation-Iraq (OSC-I) operations. At this time, it is anticipated that the LPWS assets in Iraq will be returned to the continental United States for reset/recap, upgraded to a mobile up-gun configuration, and fielded to an IFPC intercept battalion.

The IFPC is the Army's acquisition program for the transition of C-RAM SoS capability to the modular force and will provide an incremental fielding of all current C-RAM capabilities (sense, warn, intercept, respond, command and control (C2), shape and protect). IFPC Increment 1 fields a warn capability as a horizontal technology insertion, using current C-RAM warning equipment to provide early, localized warning to the brigade combat teams (BCTs). It will employ the Air Defense Airspace Management (ADAM) cell already resident in the BCT headquarters as the C2 element, use the Firefinders and LCMRs already in the target acquisition platoon of the Fires battalion as the sense element, and add existing C-RAM warning devices, controller, and dedicated communications devices between the radars and the ADAM cell. IFPC Increment 1 additional equipment (for example, speakers and masts) will warn localized affected areas, and a wireless LAN, along with the FAAD C2 system, already existing in the BCT's ADAM cell, will integrate the sensors and warning equipment, thus providing real-time situational awareness and understanding. The Air and Missile Defense Workstation (AMDWS) is also organic to the BCT's ADAM cell and will pass the RAM events and data to the Battle Command/Mission Command Data Dissemination Service/Publish and Subscribe Services (DDS/PASS) servers to provide situational awareness and understanding at all BCT units/echelons. The IFPC Increment 1 Capability Production Document was approved in August 2010.

The **Air and Missile Defense Planning and Control System (AMDPCS)** provides command-and-control capability for air defense artillery (ADA) brigades, Army air and missile defense commands (AAMDCs), and maneuver brigade combat team and joint force command-and-control elements such as the battlefield coordination detachments (BCDs). Shelter Systems-AMDPCS provides various air defense shelter systems for all echelons built on a baseline known as the air defense and airspace management shelter. The **Air and Missile Defense Workstation (AMDWS)** is a common defense/staff planning and situational awareness/situational understanding software tool. AMDWS is deployed with air and missile defense units at all echelons and is also a component of the ADAM. The AMDWS performs all aspects of AMD force operations. It assists in the automated development of the intelligence preparation of the battlefield, provides situational awareness, and is capable of planning, coordinating, and synchronizing the air, land, and sea battle. AMDWS is the interoperability link for AMD forces with the ABCS and provides the air situational input to the common operational picture.

Forward Area Air Defense Command and Control (FAAD C2). The FAAD C2 system consists of common hardware, software and communications equipment to meet the command-and-control and targeting needs of C-RAM units and AMD battalions. FAAD supports the air and missile defense battalion mission by providing C2I information to higher, adjacent and lower units. Computer displays allow commanders access to databases for the air picture, situation reports, enemy assessments and friendly forces. The FAAD C2 system can process information classified up to secret. The system provides an embedded training capability that will replicate those situations encountered in actual mission operation. Evolving software capabilities are added with each new version throughout the FAAD C2 development cycle. The FAAD C2 system also has the capability to interface with joint and NATO C2 systems. To accomplish its mission, FAAD C2 is integrated into and interoperates with both the ABCS and AMDWS. The AMDWS is integrated in FAAD C2-equipped battalions at the ADA battery and battalion command posts and is a product under the AMDPCS program. The FAAD C2 engagement operations subsystem provides the joint air picture via implementation of two-way TADIL-A, -B and -J links. The FAAD C2 system is the backbone for the C-RAM system and assists with digitization of the battlefield by providing air situational awareness to the supported force, alerting and cueing to C-RAM systems and FAAD weapons. The FAAD C2 system supports C-RAM by receiving and correlating sensor inputs, then alerting the intercept system and the sense and warn elements of a mortar, artillery and/or rocket attack. The FAAD C2's ever-expanding mission encompasses the detection, acquisition, and identification of enemy mortar and rocket projectiles, helicopters, fixed-wing aircraft, and unmanned aerial vehicles; the distribution and dissemination of C2I data among the air and missile defense units and combined arms elements; the provision of early warning; and alerting the supported forces.