United States Army

Weapon Systems 2002

To the Reader:

In this new century, The Army is—and shall continue to be—the world's preeminent land warfighting force. It is precisely because of our capabilities that those who would inflict injury on our people or our interests must seek new means to harm us. Today's Army must be versatile and adaptive, capable of conducting a wide range of operations, from major theater war, counter-terrorism, and homeland security to peace enforcement, peacekeeping, humanitarian assistance, and others that occur as needs arise.

The Army continues to revolutionize its capabilities, streamline its operations, and prepare for strategic responsiveness and dominance across the entire spectrum of operations. As it transforms, The Army will continue to increase its flexibility and agility to meet new challenges. Meanwhile, the necessity for greater lethality, survivability and deployability across the entire spectrum of conflict has never been more apparent—or as close to our reach.

As part of realizing The Army Vision, we are selectively modernizing and recapitalizing the existing force, deploying an Interim Force to fill flexibility, lethality and sustainability gaps, and evolving toward an even more capable Objective Force. This handbook outlines the major systems that will enable our warfighters to work confidently, secure in the knowledge that they have the best equipment created by the best minds to operate in any environment.

We hope you find this book a valuable and informative resource.

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TABLE OF CONTENTS

How to Use this Book....VIII
Introduction: An Army in Transformation....1

WEAPON SYSTEMS

Modernization....6

Advanced Field Artillery Tactical Data System (AFATDS)....8
Aerial Common Sensor (ACS)....10
Airborne Reconnaissance Low (ARL)....12
Air Traffic Control (ATC) Systems....14
Air Warrior (AW)....16
Air/Missile Defense Planning and Control System (AMDPCS)....18
All Source Analysis System (ASAS)....20
Area Common User System Modernization Program (ACUS MOD)....22
Army Airborne Command and Control System (A2C2S)....24
Army Battle Command System (ABCS)....26
Army Common Ground Station (ACGS)....28
Army Key Management System (AKMS)....30
Army Tactical Missile System (ATACMS) Blocks I and IA....32
Army Tactical Missile System - BAT (ATACMS-BAT) Block II....34
Automatic Chemical Agent Detector/Alarm (ACADA)....36
Biological Vaccine Program/Joint Vaccine Acquisition Program (JVAP)....38
Close Combat Tactical Trainer (CCTT)....40
Comanche....42
Combat Service Support Control System (CSSCS)....44
Common Hardware Systems (CHS)....46
Common Missile....48
Crusader....50
Digital Topographic Support System (DTSS)....52
Division TUAV-SIGINT Program (DTSP)....54
Driver's Vision Enhancer (DVE)....56
Enterprise Information Systems (EIS)....58
Excalibur 155mm Precision-Guided Extended Range Artillery Projectile Family....60
Family of Medium Tactical Vehicles (FMTV)....62
Firefinder (AN/TPQ-47)....64
Force XXI Battle Command Brigade-and-Below (FBCB2)....66
Forward Area Air Defense Command and Control (FAAD C2)....68
Global Command and Control System–Army (GCCS-A)....70

Global Positioning System (GPS) 72
Ground-Based Midcourse Segment (GBMS) of Missile Defense 74
Guardrail/Common Sensor (GR/CS) 76
Guided Multiple Launch Rocket System (GMLRS) 78
High Mobility Artillery Rocket System (HIMARS) 80
Individual Combat Identification System (ICIDS) 82
Integrated Meteorological System (IMETS) 84
Integrated System Control (ISYSCON) V(1)/V(2) 86
Interim Armored Vehicle (IAV) 88
ISYSCON (V)4/Tactical Internet Management System (TIMS) 90
Javelin 92
Joint Biological Point Detection System (JBPDS) 94
Joint Chemical Agent Detector (JCAD) 96
Joint Land Attack Cruise Missile Defense (LACMD) Elevated Netted Sensors Systems (JLENS) 98
Joint Network Management System (JNMS) 100
Joint Service Lightweight Integrated Suit Technology (JSLIST) 102
Joint Service Lightweight Nuclear Biological Chemical Reconnaissance System (JSLNBCRS) 104
Joint Service Lightweight Stand-off Chemical Agent Detector (JSLSCAD) 106
Joint Tactical Ground Stations (JTAGS) 108
Joint Tactical Information Distribution System (JTIDS)/Multifunctional Information Distribution System (MIDS) 110
Joint Tactical Radio System (JTRS) 112
Joint Tactical Terminal (JTT) 114
Joint Warning and Reporting Network (JWARN) 116
Land Warrior (LW) 118
Lightweight Forward Entry Device (LFED)/Forward Entry Device (FED)/Pocket-Sized Forward Entry Device (PFED) 120
Lightweight Laser Designator Rangefinder (LLDR) 122
Line-of-Sight Anti-Tank (LOSAT) 124
Longbow HELLFIRE 126
Long Range Advanced Scout Surveillance System (LRAS3) 128
Maneuver Control System (MCS) 130
Medium Caliber Armaments 132
Medium Extended Air Defense System (MEADS) 134
Military Satellite Communications (MILSATCOM)–EHF 136
Military Satellite Communications (MILSATCOM)–SHF 138
MILSATCOM — Ultra High Frequency (UHF) and Global Broadcast System (GBS) 140
Mobile Gun System (MGS) Main Gun Ammunition 142
Mortar (120mm) 144
Near Term Digital Radio System (NTDRS) 146
Night Vision (NV) Image Intensification (I2) System 148
Objective Individual Combat Weapon (OICW) 150

Profiler 152
Prophet 154
Second Generation Forward Looking Infrared (FLIR) 156
Sentinel 158
Single Channel Ground and Airborne Radio System (SINCGARS) 160
Smoke Generator (M56 Coyote) 162
Stinger 164
Striker 166
Synthetic Aperture Radar/Moving Target Indicator (SAR/MTI) 168
Tactical Endurance Synthetic Aperture Radar (TESAR) 170
Tactical Exploitation System (TES) 172
Tactical Operations Center (TOCs) 174
Tactical Unmanned Aerial Vehicle (TUAV) 176
Tank Main Gun Ammunition 178
Theater High Altitude Area Defense (THAAD) System 180
Thermal Weapon Sight (TWS) 182
TOW Improved Target Acquisition System (ITAS) 184
Warfighter Information Network–Tactical (WIN-T) New Start 186
Wolverine 188
XM777 Joint Lightweight 155mm Howitzer (LW155) 190

Recapitalization 192

Abrams 194
Apache Longbow 196
Black Hawk (UH-60) 198
Bradley Fire Support Team (BFIST) Vehicle 200
Bradley M2 Infantry/M3 Cavalry Fighting Vehicle 202
CH-47 Chinook/Improved Cargo Helicopter (CH-47F) 204
Field Artillery Ammunition Support Vehicle (FAASV) 206
Firefinder (AN/TPQ-36 (V)8) 208
Heavy Expanded Mobility Tactical Truck-Load Handling System (HEMTT-LHS) 210
Hercules 212
High Mobility Multipurpose Wheeled Vehicle (HMMWV) 214
M113 Family of Vehicles (FOV) 216
Multiple Launch Rocket System (MLRS) 218
PATRIOT 220

Maintenance 222

Armored Security Vehicle (ASV) 224
Avenger 226

Bradley Linebacker 228
Enhanced Position Location Reporting System (EPLRS) 230
Fixed Wing 232
Kiowa Warrior (Legacy Force) 234
Nuclear, Biological and Chemical Reconnaissance System (NBCRS)–Fox 236
Paladin 238
Palletized Load System (PLS) 240
Small Arms 242

Science and Technology 244

Future Combat Systems (FCS) 246
- Multi-Role Armament and Ammunition System (MRAAS) ATD 246
- Compact Kinetic Energy Missile Technology ATD 247
- Ballistic Protection for FCS 247
- FCS Mine Detection and Neutralization 247
- Semi-Autonomous Robotics for FCS 248
- Advanced Night Vision Goggles (ANVG) ATD 248

Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) 249
- Networked Sensors for the Objective Force ATD 249
- Sensor Performance Technologies 249
- Battlespace Terrain Reasoning and Awareness (BTRA) 249
- Full Spectrum Active Protection System (FSAP) 250
- Agile Commander ATD 250
- Logistics Command and Control (LOG C2) ATD 250
- Multi-Functional On-The-Move Secure Adaptive Integrated Communications (MOSAIC) ATD 251
- Tactical Command and Control (C2) Protect ATD 251
- Joint Intelligence, Surveillance and Reconnaissance (JISR) ACTD 252

Force Health Protection and Combat Health Support 252
- Combat Casualty Care 252
- Military Operational Medicine Research Program 254
- Systems Hazard Research 255
- Gulf War Illness 255
- Advanced Medical Technology/Telemedicine Research Program 255
- Infectious Disease Research 256
- Medical Chemical and Biological Defense Research 257
- Next-Generation Anthrax Vaccine 257
- Congressionally Directed Medical Research Programs 257

Rotorcraft 257
- Hunter Standoff Killer Team (HSKT) 257
- Loiter Attack Munition—Aviation 258

Future Warrior Technology 258
Objective Force Warrior 258
Lethality 259
Low Cost Precision Kill/Advanced Precision Kill (LCPK) ATD 259
Objective Crew Served Weapon (OCSW) ATD 259
Solid State Heat Capacity Laser (SSHCL) Science and Technology Objective 260
Logistics Reduction 260
Corps of Engineers Research and Development (R&D) 260
JRAC Joint Rapid Airfield Construction (JRAC) 261
Enhanced Coastal Trafficability and Sea State Mitigation (ECT/SSM) ATD 261
Hazardous Waste Remediation of Army Sites 262
Unexploded Ordnance (UXO) Identification and Discrimination 262
Sustainable Military Use and Stewardship of Army Lands 262
Integrated Situation Awareness and Targeting (ISAT) ATD 263
Lightweight Airborne Multispectral Minefield Detection (LAMD) 263
Personnel Technologies 264
Methods and Measures of Commander-Centric Training STO 264
Selection, Classification and Performance Metrics for the Objective Force STO 264
Advanced Simulation 264
Institute for Creative Technologies (ICT) 264

Appendices

Army Combat Organizations 269
Glossary 271
Weapon Systems Top Fifty Contractors 275
Weapon Systems Contractors by System 277
Weapon Systems Contractors by State 283
Points-of-Contact 293
Index 299


Advanced Field Artillery Tactical Data System (AFATDS)
Mission
Description
Foreign Counterpart
Foreign Military Sales
Program Status
Projected Activities
Prime Contractors
Advanced Field Artillery Tactical Data System (AFATDS)

The system's **Acquisition Phase** is highlighted. The terms are explained in the glossary.

The **Prime Contractor(s)** for the system is displayed. The major subcontractors are listed in the Appendices.

The **U.S. Outline** highlights the states in which system contractors with ≥ 5% of total program value for FY01 are located.

Introduction: An Army in Transformation

A New Century's Complex Challenges

At the dawn of this new century, it is clear—perhaps more so than at any time since the height of the Cold War—that the United States has assumed the leading role in the promotion of freedom and liberty, free markets and global peace. As we plunge headlong into a future both full of promise and fraught with complexity, our armed forces face a range of challenges and threats perhaps unprecedented in their more-than-two-century history. On the one hand, regional instabilities, religious zealotry and opportunistic evil, fragmented states and terrorism, ethnic strife, the proliferation of weapons of nuclear, biological and chemical mass destruction are some of the challenges we face. On the other hand are responsibilities—action on every scale and in varied and nontraditional support and sustainment operations, peace enforcement, peacekeeping and humanitarian assistance—created by our role as global keeper of the flame of freedom.

Because U.S. military forces are overwhelmingly superior to any in the world, those who would do us harm seek new means for inflicting injury. When, as on September 11, 2001, a small group of fanatics shows its willingness to use nearly any means to inflict harm on the United States and its interests, our armed forces are put to a wholly new test. These actions require not only the capability of a crushing reaction by this great nation, but also the ability to act proactively across the continuum of our warfighting and peacekeeping abilities. While maintaining necessary military superiority, the U.S. Armed Forces in general, and The Army in particular, must adapt doctrine, organizations and systems to fight adaptive and inventive adversaries. The Army must field forces that have rapid mobility, endurance, precision fires, adaptive leaders, dominating standoff abilities through fires and vertical maneuver and an overall flexibility of conducting joint and combined operations in all environments.

The Army's Role in an Era of Change

We have seen and are seeing the essential roles our military forces must play in safeguarding our national interests, ensuring the safety of our homeland and enabling the United States to fulfill our global responsibilities. At their core, our armed forces have a non-negotiable contract with the American people to defend the nation and to fight and win the nation's wars. This is an awesome responsibility, but one they are fully capable of meeting. However, this responsibility requires that our armed forces have the agility and flexibility to exercise the military superiority commensurate with and essential to our global leadership. Therefore, the U.S. Armed Forces require world-class personnel, materiel and leadership capable of rapid response and dominance across the full spectrum of operations in a joint, interagency and multinational environment.

The U.S. Army remains the most operationally flexible ground force in the world, habitually operating with joint forces and capable of operations as part of any multinational alliance or coalition. And yet The Army has not yet completed its transformation into the post-Cold War force envisaged in The Army Vision, an Army whose might and resources can be projected across the globe quickly, dominantly, sustainably, lethally and survivably. We have seen the inherent potential of The Army as it has begun transformation into this Objective Force. In the future we will see that potential realized as transformation is completed.

Future conflicts require strategic responsiveness—forward-deployed forces, forward-positioned capabilities and force projection from the continental United States or any other location where needed capabilities reside. Specifically, The Army will be able to deploy a combat-capable brigade anywhere in the world within 96 hours, a combat-capable division within 120 hours and five combat-capable divisions within 30 days.

Agility and versatility translate into the ability to move a force from a non-war operation, such as humanitarian relief or stability and support operations, to warfighting very quickly. It requires excellence in personnel, training and leadership. It requires platforms that are smaller and lighter, yet lethal and survivable.

Lethality calls for every element in the warfighting formation to be capable of generating combat power and contributing decisively to the fight.

Survivability means maximum protection to forces at the individual soldier level, whether mounted or dismounted.

Sustainability means reducing The Army's logistics footprint and replenishment demands by controlling the number of vehicles deployed, leveraging reachback capabilities and investing in a system-of-systems approach to the weapons and equipment we design.

Achieving Modernization

Building and fielding combat-capable units is the ultimate goal of Army modernization efforts, for both near- and far-term. To effectively and efficiently accomplish this task, The Army employs two key processes, Unit Set Fielding and Software Blocking, both of which are system-of-systems approaches that emphasize interoperability and synchronization of individual systems. The concepts work together to produce combat-capable units in the shortest period of time. The overall Modernization Strategy is comprised of the following three fundamental tenets and priorities:

- Accelerating science and technology (S&T) to permit fielding of the Objective Force and, in particular, the Future Combat Systems (FCS), the foundation of that force (see Science and Technology Chapter).
- Acting to meet immediate operational requirements through rapid fielding of an Interim Force.
- Maintaining and improving capabilities of the current Legacy Force through selected modernization and recapitalization efforts, thus ensuring readiness of the force and enabling future transformation.

Objective Force

The Objective Force is our future, full-spectrum force: organized, manned, equipped, and trained to be more strategically responsive, deployable, agile, versatile, lethal, survivable and sustainable across the entire spectrum of military operations from Major Theater War (MTW) through counter terrorism to Homeland Security. Objective Force units will arrive immediately capable of conducting simultaneous, distributed and continuous combined arms, air-ground operations, day and night, in all terrain conditions throughout the battlespace. Army units conducting joint and combined operations will *see first*, *understand first*, *act first* and *finish decisively* at the strategic, operational, and tactical levels of operation.

Army Objective Force units will dominate land operations and provide the decisive complement to air, sea and space operations. They will create synergy within the Joint Task Forces by controlling ground, where people and political authorities reside, and by defeating our opponents in their protective sanctuaries or forcing them into the open where they can be destroyed with joint fires.

See First. Objective Force units employing advanced technologies that will result in unprecedented intelligence, surveillance and reconnaissance capabilities will see first by detecting, identifying, and tracking the individual components of enemy units. This common integrated operational picture will enable forces to see the enemy, both in whole and in part, as a complex, adaptive organization, in a common operational picture (COP).

Understand First. Using the COP, Objective Force commanders will be able to leverage the intellect, experience and tactical intuition of leaders at multiple levels in order to identify enemy centers of gravity (COGs) and conceptualize solutions. Time gained through effective use of information technologies permits Objective Force units to seize and retain the initiative, building momentum quickly for decisive outcomes.

Act First. Seeing and understanding first gives commanders and their formations the situational dominance necessary to act first—to engage at times and places with methods of their own choosing. Leveraging the COP, Objective Force units rapidly learn of actions, understand the impacts and then synchronize their own actions.

Finish Decisively. Objective Force units finish decisively by destroying the enemy's ability to continue the fight and achieving dominance quickly. Objective Force units do this by building momentum and rapidly transitioning to assault and exploitation operations without allowing the enemy time or opportunity to regroup and continue the fight on its terms.

Objective Force Characteristics

These characteristics of the Objective Force are complementary features that together produce an overall capability greater than the individual capabilities they describe. In turn, they provide the analytical foundation for developing the concepts, doctrine and systems that will constitute the Objective Force.

Responsive. The Objective Force must be responsive to allow The Army to meet frequent contingency requirements with any element of the force. Forces deployed must be prepared to accomplish their mission regardless of the environment, the nature or scope of the proposed operation or other commitments.

Deployable. To achieve this responsiveness, Objective Force units must be deployable, or capable of rapid strategic movement to create the opportunity to avert conflict through deterrence. Deployability includes a platform lighter than 20 tons and capable of fitting a "C-130 (like)" envelope to facilitate having a combat brigade on the ground within 96 hours after liftoff, a division within 120 hours and five divisions within 30 days.

Agile. Army forces must be able to shift intensity of operations without augmentation, a break in contact or additional training. The Objective Force must replicate the agility of today's forces to shift seamlessly from offensive to defensive and back again, but in a much broader context.

Versatile. Versatility is the inherent capacity of Objective Force formations to operate and dominate at any point on the spectrum of military operations.

Lethal. Objective Force lethality will exceed that of today's conventional heavy forces. Through technological improvements in weaponry and munitions, the Objective Force will have the capability to destroy enemy formations at longer ranges, with smaller calibers, greater precision and more devastating target effects.

Survivable. The Objective Force will take advantage of technologies that provide maximum protection and survivability at the individual soldier level. Objective Force survivability will be linked to its inherently offensive orientation, as well as its speed and lethality, by seeing, understanding and acting first.

Sustainable. Our forces must retain the capability to continue operations longer than any adversary The Army confronts. Sustainability means that The Army must continue to find ways to exploit advanced technologies and reduce the logistics footprint and related costs of our support structure.

The Interim Force

Establishing the Interim Force fills the near-term gap between The Army's heavy and light forces by providing units that are strategically responsive, full-spectrum-capable and ready to fight "off the ramp" with a significantly reduced logistics and support profile. Interim Force units are designed to be operationally effective at both the low end of the spectrum—peacekeeping and small-scale contingencies—as well as the high end of the spectrum where they will be effective in MTW. They will also serve as an indispensable vanguard for the future Objective Force by validating operational and organizational concepts, training and leader development initiatives and deployment scenarios.

Interim Brigade Combat Team

The Interim Force is based on the foundation of an Interim Brigade Combat Team (IBCT) equipped with a family of Interim Armored Vehicles (IAVs), lightweight artillery, and other available advanced technology.

The IBCT's two core qualities, which define the fundamental competencies of the brigade, are high mobility (strategic, operational, and tactical) and the ability to achieve decisive action through dismounted infantry assault.

The IBCT is the centerpiece of the Interim Force. Two Army brigades, one heavy (3rd Brigade, 2nd Infantry Division) and one light (1st Brigade, 25th Infantry Division) have been reorganized at Fort Lewis, Washington into an IBCT configuration. The Army plans to convert at least six brigade combat teams to an IBCT configuration. Extension of the Interim design from an IBCT to an Interim Division is currently being developed and modeled by The Army's Training and Doctrine Command (TRADOC). Recognizing the enduring need for a reconnaissance function in both the current and future operational environment, TRADOC is also developing the organizational design for an Interim Cavalry Regiment.

In July 2001, The Army announced the next four brigades to transform into IBCTs: the 172nd Infantry Brigade (Separate) at Forts Richardson and Wainwright, Alaska; the 2nd Armored Cavalry Regiment (Light) at Fort Polk, Louisiana.; 2nd Brigade, 25th Infantry Division (Light), at Schofield Barracks, Hawaii; and the 56th Brigade of the 28th Infantry Division (Mechanized), Pennsylvania Army National Guard.

Transformation to the Interim Force is occurring now with the conversion to the first two IBCTs. The transformation to the IBCT design will take about two years for an active brigade. These interim brigades are to be fielded by 2007 and will increase The Army's momentum of transformation by serving as bridge to the Objective Force.

Legacy Force

The current Army force—the Legacy Force—continues with its responsibility to fight and win decisively against any threat while The Army transforms. The Army will rely upon the Legacy Force refitted and recapitalized to the extent necessary to provide some Objective Force-like capabilities to existing weapons, systems, and platforms, to fight and win conflicts at the high end of the operational spectrum well into the fielding of the Objective Force, which begins in Fiscal Year 2008. For that reason, resources must be devoted toward the recapitalization and limited modernization of the Legacy Force while The Army successfully transforms itself. The resources directed toward the Legacy Force will be the minimal amount needed to maintain combat overmatch over any potential enemy in order to devote all necessary resources to the research and development of the Objective Force.

A critical element of the Legacy Force is the requirement for an offensive or counteroffensive capability for use in a possible major conflict. Thus, we are assembling a three-division corps, with an armored cavalry regiment, capable of conducting decisive counteroffensive operations anywhere in the world. Additionally forward-deployed and early-deploying contingency forces will be recapitalized and selectively modernized. Reserve component forces will maintain capabilities compatible with the units that they support.

Conclusion

In sum, while modernization is essential, it is really only a part of the process of change. Army Transformation will result in the Objective Force, which will shift The Army's focus from a Cold War construct to a combat force strategically responsive and dominant at every point on the spectrum of conflict. Anticipated technological improvements will enable new organizational and operational concepts that optimize the employment of Army and joint capabilities to fine tune and streamline transition from disaster relief to low-intensity contingencies to high-intensity warfighting without pause. The 2002 Army Weapon Systems Handbook describes the investments being made today in materiel and technology to ensure the readiness of our Army tomorrow. The Army of the Future, the Objective Force, and the trained and committed soldiers who fill its ranks, will rely upon these systems as they support and defend our nation and its global interests well into the 21st century. The ultimate result shall be that the world acknowledges the United States' commitment to deterrence across the warfighting spectrum, and those who would test our values and ideals shall have no doubt that our response will be swift, overwhelming and decisive.

Modernization

The Army's modernization strategy will support the goal of transforming The Army into a more responsive and dominant force in the future through the development and/or procurement of new systems with improved warfighting capabilities.

The strategy aims to produce that force while at the same time providing a current force able to meet The Army's ongoing responsibilities to the nation.

Modernization programs support the transformation process. Three major components of The Army's modernization strategy include the following:

- An Objective Force that leverages the latest science and technology to achieve full interoperability and information dominance and enables timely fielding and utilization of Future Combat Systems (FCS).
- The Interim Force, a transformation entity that provides commanders a broader and more flexible range of warfighting capabilities for evolving missions and their unique requirements.
- The Legacy Force will maintain our current readiness but also enables transformation through prioritized recapitalization in which digitization plays a major role.

The desired end-state is a strategically responsive Army more capable of dominance along the full spectrum of military operations in a joint and combined environment, in any climate, setting or location.

Advanced Field Artillery Tactical Data System (AFATDS)

Advanced Field Artillery Tactical Data System (AFATDS)

Mission

Provide an automated command, control and communications system for future fire support systems.

Description and Specifications

The Advanced Field Artillery Tactical Data System (AFATDS) provides the multi-service (Army and Marine Corps) automated Fire Support Command, Control and Communication (C3) portion of the Army Battle Command System (ABCS). AFATDS enables the maneuver commander to plan and execute attacks using the optimal weapon-target pairing combinations. It provides the maximum exploitation of fire support assets available on the battlefield by providing integrated automated support for planning, coordinating and controlling all fire support assets (field artillery, mortars, close air support, naval gunfire, attack helicopters and offensive electronic warfare) and for executing counterfire, interdiction and suppression of enemy targets for all fire support operations. AFATDS will utilize the joint common operating environment and the Army technical architecture to support the First Digitized Division/Corps and Army warfighter experiments. AFATDS will interoperate with the other ABCS Battlefield Functional Areas as well as the Navy and Air Force's current and evolving weapon and control systems. AFATDS will interoperate with the German, French, British, and Italian fire support systems.

Foreign Counterpart

France: Atlas; Germany: Adler; Italy: SIR; Norway: Odin; United Kingdom: Bates

Foreign Military Sales

The price and availability to sell AFATDS has been issued to Egypt, Kuwait, Portugal, Saudi Arabia, Taiwan, and Turkey. Letters of Agreement have been signed with Portugal and Turkey.

Program Status

- **1QFY01** AFATDS '99 Limited user test.
- **4QFY01** AFATDS '99 Limited user test.
- **1QFY02** AFATDS '99 Materiel release.

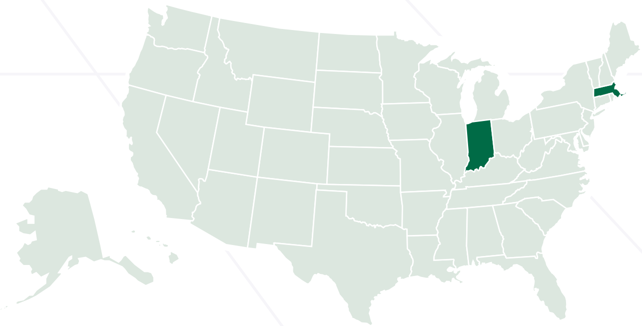
Projected Activities

- **3QFY03** AFATDS 7.0 Limited user test.
- **1QFY04** AFATDS 7.0 Materiel release.
- **3QFY04** AFATDS 8.0 Limited user test.
- **1QFY05** AFATDS 8.0 Materiel release.

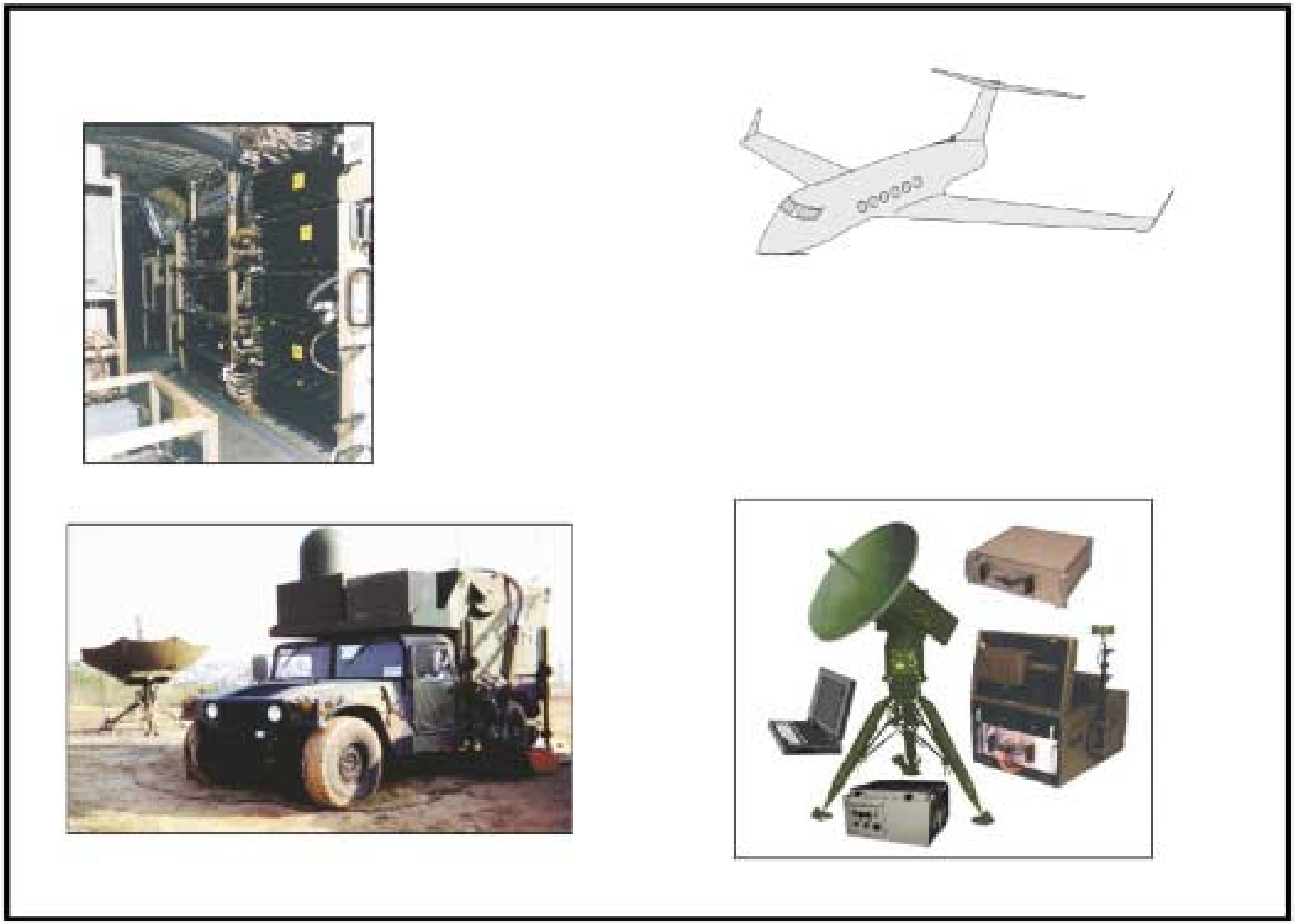
Prime Contractors

Software: Raytheon (Fort Wayne, IN)

Hardware: General Dynamics (Taunton, MA)



See appendix for list of subcontractors



Aerial Common Sensor (ACS)

Mission

Provide an Objective Force system that will merge and enhance the sensor capabilities of the legacy intelligence, surveillance and reconnaissance (ISR) platforms (Airborne Reconnaissance Low [ARL] and Guardrail Common Sensor [GRCS]) into a single multi-intelligence airborne system. It will provide rapid and responsive ISR coverage to meet Army Transformation.

Description and Specifications

The Aerial Common Sensor (ACS) is an Objective Force airborne intelligence collection and dissemination system, and is required to satisfy the Army's critical need for a world-wide, self-deployable, airborne ISR capability that can immediately begin operations when arriving in theater The first ACS is scheduled to be fielded beginning in FY09. It is anticipated that each of the five Aerial Exploitation Battalion GRCS and ARL units will be replaced starting with the oldest every other year, completing the fielding in FY17.

The ACS acquisition strategy consists of migrating current fielded systems' components (downsized ground station and datalinks) towards an ACS configuration while simultaneously evaluating the sensors and platform. The ACS will:

- Provide a multi-intelligence system capable of supporting warfighter requirements across the full spectrum of operations.
- Provide critical intelligence and combat information from the maneuver brigade to the echelons above corps commander, via Distributive Common Ground System-Army.
- Provide a critical precision SIGINT linkage into the Joint Airborne Network.
- Be interoperable with other intelligence platforms.

Foreign Counterpart

Numerous countries possess airborne electronic warfare systems, but none achieve the Multi-INT and direction-finding accuracy capabilities of ACS.

Foreign Military Sales

None

Program Status

- Completing Concept Exploration Phase.
- Component Advance Development (CAD) performance specification analysis and source selection.

Projected Activities

- **2QFY02** CAD source selection leading to CAD.
- **3QFY02** ACS CAD contract awards.
- **3QFY03** Milestone B Decision Review.

Prime Contractors

TBD

See appendix for list of subcontractors

Airborne Reconnaissance Low (ARL)

Airborne Reconnaissance Low (ARL)

Mission
Detect, locate, and report threat activities using a variety of imagery, communications-intercept and moving-target-indicator sensor payloads.

Description and Specifications
The Airborne Reconnaissance Low (ARL) is a self-deploying, multi-function, day/night, all-weather reconnaissance intelligence echelons above corps asset. It consists of a modified DeHavilland DHC-7 fixed-wing aircraft equipped with communications intelligence (COMINT), imagery intelligence (IMINT), and Synthetic Aperture Radar/Moving Target Indicator (SAR/MTI) mission payloads. The payloads are controlled and operated via onboard open-architecture, multi-function workstations.

Intelligence collected on the ARL can be analyzed and recorded on the aircraft workstations in real time or stored on-board for post-mission processing. During multi-aircraft missions, data can be shared between cooperating aircraft via ultra high frequency (UHF) air-to-air data link to allow multi-platform COMINT geolocation operations. The ARL system includes a variety of communications subsystems to support near-real-time dissemination of intelligence and dynamic retasking of the aircraft. There are currently two configurations of the ARL system:

- The ARL-COMINT (ARL-C) configuration with a conventional communications intercept and direction finding (location) payload.
- The ARL-Multifunction (ARL-M) configuration equipped with a combination of IMINT, COMINT, and SAR/MTI payload.

Foreign Counterpart
Numerous countries possess airborne signals intelligence (SIGINT) and/or IMINT systems, but none provides the robust multi-intelligence capability of ARL.

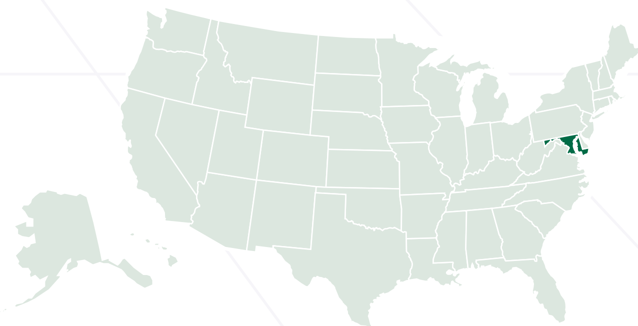
Foreign Military Sales
None

Program Status
- Seven ARL systems have been fielded to date.*
- Two ARL-Cs and one ARL-M are stationed at Ft. Bliss, TX and primarily support SOUTHCOM requirements; three ARL-Ms provide support to PACOM (Korea).
- One ARL-M (#5) is pending final system acceptance.
- One ARL-M (#6) is currently in production to be fielded in 3QFY03.
- 1QFY02 final system acceptance of ARL-M #5 (Ft. Bliss).

**ARL-I crashed in 4QFY99.*

Projected Activities
- **FY02** Evaluate and select imagery sensors for ARL-M#6.
- **FY02** Fleet-wide upgrades for aircraft survivability equipment, over-the-horizon communications, SIGINT sensors, and IMINT sensors. Integration of measurement and signatures intelligence sensor onto ARL-Ms.
- **FY02** Demonstrate hyperspectral imagery applications. Demonstrate multi-INT data fusion capabilities.

Prime Contractors
California Microwave (Belcamp, MD)

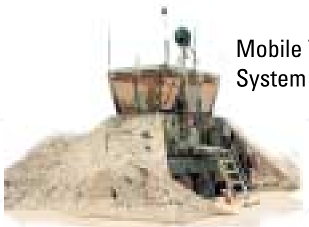


See appendix for list of subcontractors

Air Traffic Control (ATC) Systems

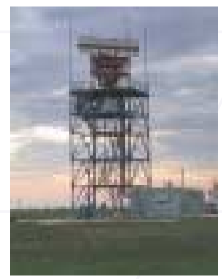
Tactical Airspace Integration System (TAIS)

Air Traffic Navigation, Integration, Coordination System (ATNAVICS)



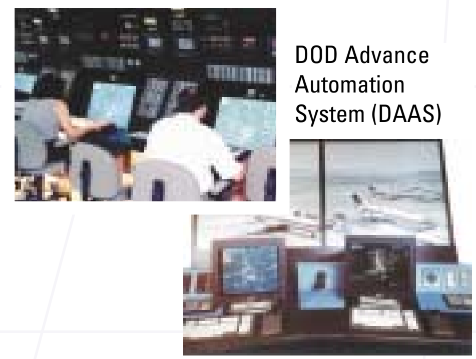
Mobile Tower System (MOTS)

Digital Airport Surveillance Radar (DASR)



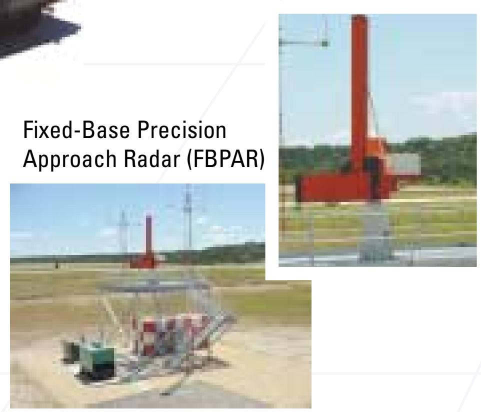
Portable Airfield Lighting System (PALS)

DOD Advance Automation System (DAAS)



Tactical Terminal Control System (TTCS)

Fixed-Base Precision Approach Radar (FBPAR)



Voice Communication Switching System (VCSS)

Air Traffic Control (ATC) Systems

Mission
Provide fixed-base and rapidly deployable tactical air traffic control (ATC) and automation services to military and commercial aircraft; replace existing analog ATC radars and antiquated and unsupportable automation systems with digital primary and secondary radars and an integrated automation system for information from local and remote towers.

Description and Specifications
The Air Traffic Control (ATC) Program Management Office manages the integration of a number of critical systems: the digital airport surveillance radar (DASR); the DOD advance automation system (DAAS); the voice communication switching system (VCSS); the fixed-base precision approach radar (FBPAR); the air traffic navigation, integration, coordination system (ATNAVICS); the tactical airspace integration system (TAIS); tactical terminal control system (TTCS); the mobile tower system (MOTS); and the portable airfield lighting system (PALS).

DASR and DAAS are part of the Joint DOD/Federal Aviation Administration (FAA) National Airspace System (NAS) modernization effort. VCSS is a modular digital voice communication switching system that will replace the FSC 92 switching system in 49 U.S. Army Air Traffic Control Facilities. FBPAR serves as the Army's primary aid to recover aircraft to fixed-base airfields during adverse weather. ATNAVICS utilizes surveillance radars, a precision approach radar and secure voice communications equipment to safely control airspace within a 25 nautical mile radius of the system and provide precision landing capabilities. ATNAVICS also provides tactical surveillance and precision approach and landing control for aircraft operating in nearly all weather conditions. It can be rapidly deployed with troops and equipment to remote locations where no operational airport control and landing system exists. TAIS is a highly mobile, readily deployable, battlefield automated system (BAS) that provides automated Army Airspace Command and Control (A2C2) and air traffic services (ATS) support at echelons above corps, corps, and division levels of command. TAIS is an Army Battle Command System (ABCS) that interfaces with joint (the Theater Battle Management Core System [TBMCS]), combined, civil and national military airspace control agencies and their airspace management systems. TAIS provides dedicated, overarching management of Army airspace activities and battlefield visualization of all airspace activity within the third dimension of the battlespace. TTCS provides initial ATS capabilities at remote landing sites and drop zones, and includes secure communications equipment, a meteorological measurement system, and the ability to determine its precise location and relay that location to aircraft via ground-air voice radios. MOTS provides positive air traffic control and aircraft separation during both air and ground operations at tactical airfields, tactical landing zones, forward area re-arming, and refueling points and existing military/civilian airfields. PALS provides positive visual cues for rate of descent and runway alignment at tactical airfields, tactical landing zones, and existing civilian/military airfields for aircraft recovery during night and inclement weather operations.

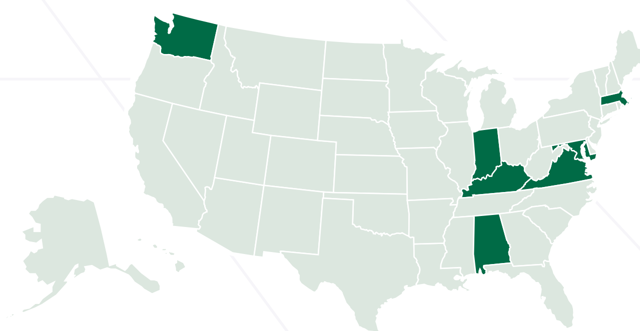
Foreign Counterpart
No known foreign counterpart

Foreign Military Sales
None

Program Status
- DASR, DAAS, VCSS, FBPAR and ATNAVICS are in production.
- TAIS fielded.
- TTCS, MOTS and PALS are in development.

Projected Activities
- Continue DASR, DAAS, VCSS, FBPAR and ATNAVICS fielding.
- Initiate TTCS, MOTS and PALS production.

Prime Contractors
- **DASR and DAAS:** Raytheon Electronics Systems (Sudbury, MA)
- **VCSS:** Northrop Grumman Electronics Systems; Denro Systems (Gaithersburg, MD); Raytheon Service Company (Lexington, KY)
- **FBPAR and ATNAVICS:** Raytheon Systems Company (Bedford, MA)
- **TAIS:** General Dynamics (Huntsville, AL)
- **TTCS:** Raytheon (Hughes/Magnavox) (Ft. Wayne, IN)
- **PALS:** Laser Guidance (Redmond, WA); Galaxy Lightbeam (Arlington, VA)



See appendix for list of subcontractors

Integrate Equipment and Aircrew

Aircrew Integrated Helmet System
- Advanced Composite Construction
- Custom Fit
- Dual Visor Assembly
- Maintained by Unit ALSE

Laser Eye Protection
- Green 2 Notch
- Brown 3 Notch
- Polycarbonate Ballistic Visor
- CLEPIR
- JALEPV

Communication Ear Plug
- Low Technology / Low Cost Approach
- Two small earphones inside foam earplugs
- Wire runs from earplugs to external helmet attachment
- Extension cord available for use with CB hood
- "A Kit" not Required

Virtual Cockpit Optimization Program
- Proof of Principle Demonstration
- Demonstrate Intuitive Cockpit by Integrating Independently Developed Advanced Technologies:
  - 3-Color, Daylight HMD
  - Rotorcraft Pilot's Associate
  - Integrated Caution, Warning, & Advisory System
  - Tactile Situational Awareness System
  - Intuitive Imagery

Air Warrior

AIR WARRIOR BLOCK 1
- **Survival Equipment Subsystem**
  - Survival Gear Carrier, Body Armor, Thigh Holster
- **NBC Protection**
  - M45 Mask Blower, Chemical Protective Undergarment
- **Microclimate Cooling System (MCS)**
  - Microclimate Cooling Garment and Cooling Unit
- **Modular Integrated Helmet Display System (MIHDS)**
  - Communication Ear Plugs (CEP)
- **Over Water Mission**
  - Integrated Raft (LRU-18C), Survival Egress Air (SEA), Flotation Device
- **Clothing Items**
  - Modified ABDU
- **Quick Disconnect Wiring Assembly**

AIR WARRIOR BLOCK 2
- Combat Survivor Evader Locator (CSEL)
- Combat Identification
- Joint Protective Aircrew Ensemble (JPACE)
- Joint Service Aircrew Mask (JSAM)
- Chemical Sock and Glove
- Advanced Laser Eye Protection
- Advanced Night Vision Goggle
- Advanced Anti-Exposure System
- Wireless Intercom
- Electronic Data Manager (EDM)

Air Warrior (AW)

Mission
Improve the lethality, survivability, mobility and sustainment of Army aircrew in combat; integrate all aviation life support equipment (ALSE) and mission equipment into an aircrew ensemble that enhances aircrew cockpit synergy and aircraft mission capability.

Description and Specifications
Previously, the separate development and application of ALSE resulted in a layered, non-integrated assemblage of protective/survival gear normally carried or worn by the aircrew member. Air Warrior (AW), linked to the Land Warrior program via a common Capstone Requirements Document, is a new generation aircrew ensemble that provides advanced life support, ballistic protection, and nuclear, biological and chemical (NBC) protection in rapidly tailorable, mission-configurable modules. The AW concept is being developed with interoperability in mind and has leveraged several joint service technology efforts.

The system consists of components effectively integrated to maximize safe aircraft operation and human performance while not encumbering the aircrew. These components will include the Modular Integrated Helmet Display System (MIHDS), microclimate cooling system, NBC protection, body armor, survival items for escape and evasion, overwater survival items and an interface to the aircraft platform. Improvements to the AW system will be provided via a “block” approach (a time-phased, evolutionary acquisition program) to solve equipment shortcomings. The AW system is the key ingredient to closing the performance gap that exists today between the aircrew and the aircraft. AW is answering the aviation warfighter challenges of today and tomorrow by developing affordable, responsive, deployable, versatile, lethal, survivable and sustainable aircrew equipment.

Foreign Counterpart
No known foreign counterpart

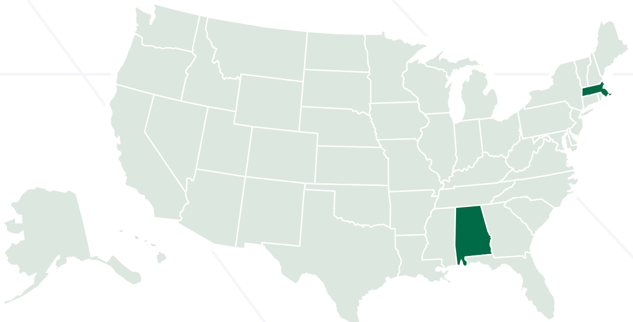
Foreign Military Sales
None

Program Status
The Air Warrior program is nearing the end of the system development and demonstration phase. The system has successfully completed critical design review and system verification testing (to include key performance parameter) and is currently in developmental test.

Projected Activities
- **3QFY02** Complete Block 1 Developmental Test.
- **1QFY03** Complete Block 1 Operational Test.

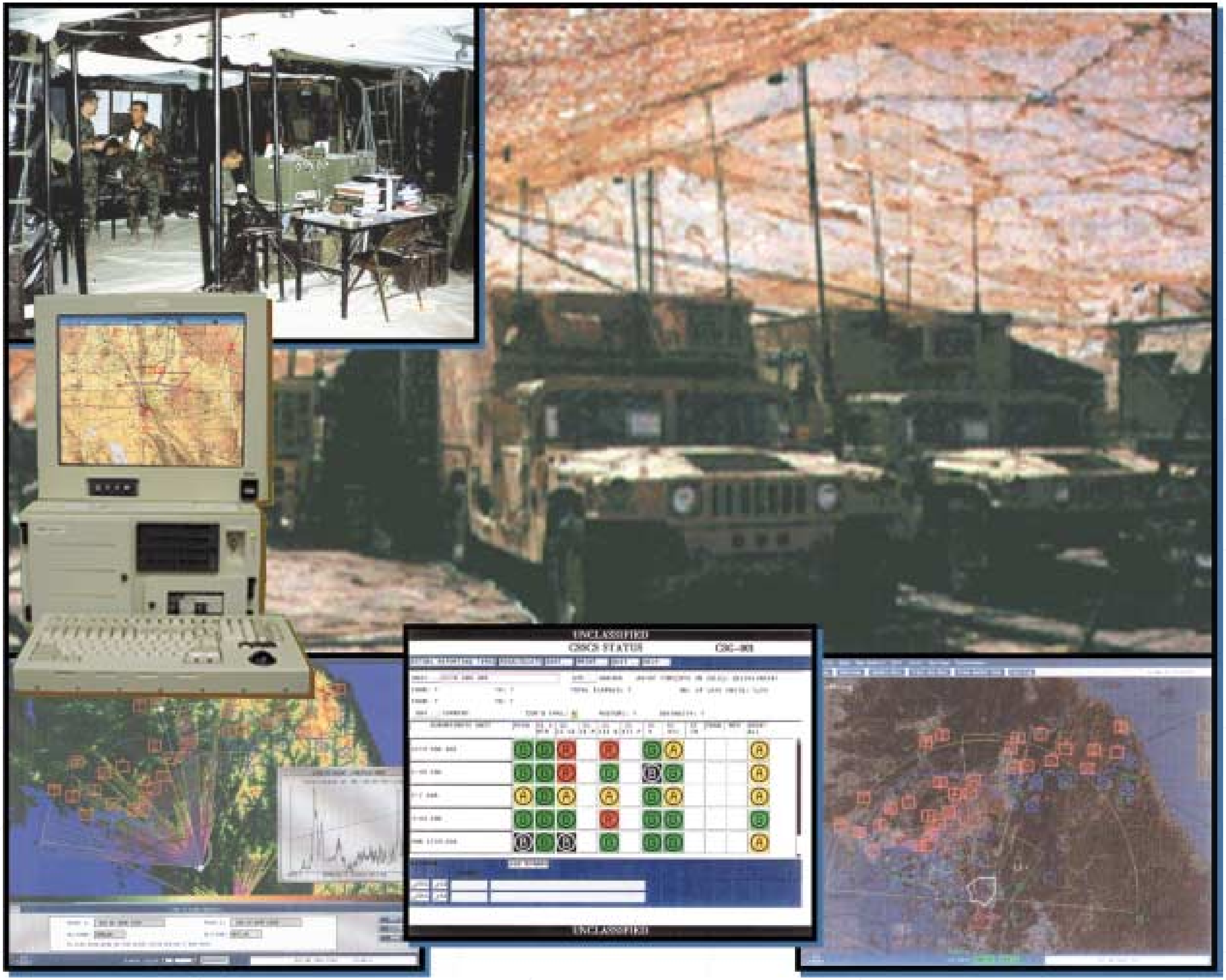
  3QFY03 Block 1 Production Decision.
- **3QFY04** First unit equipped (160th Special Operations Aviation Regiment (A)).

Prime Contractors
The U.S. Army at Huntsville, AL is the prime system integrator.



See appendix for list of subcontractors

Air/Missile Defense Planning and Control System (AMDPCS)



Air/Missile Defense Planning and Control System (AMDPCS)

Mission
Provide Air and Missile Defense (AMD) command and control capability to Air Defense Artillery (ADA) Brigades, the Army Air and Missile Defense Commands (AAMDC), corps and above headquarters and joint force command and control elements, such as the Battlefield Coordination Detachment; provide a fire control system, common air and missile defense planning and battlespace situational awareness and joint, interoperable battle management/command, control, communications, computers and intelligence (BM/C4I) capability.

Description and Specifications
The Air/Missile Defense Planning and Control System (AMDPCS) is the backbone of Army air defense. It consists of sheltered systems with integrated communication equipment that provide ADA Brigades with a fire control system for monitoring and controlling engagement operations by subordinate battalions via the Air Defense System Integrator (ADSI). AMDPCS provides a common air and missile defense staff planning and battlespace situational awareness tool to achieve a common tactical and operational air picture via the Air and Missile Defense Workstation (AMDWS). The AMDWS is fielded to AMD units at all echelons of command, battery through theater. The AMDPCS provides interoperability for Army AMD forces with the standard Army Battle Command Systems (ABCS) BM/C4I, providing the air situation input to the Common Operational Picture. AMDWS also provides interoperability with Joint Theater Air and Missile Defense (JTAMD) forces. AMDPCS provides sheltered systems for the ADA Brigades and the AAMDCs and enables active, passive and attack operations coordination with the joint forces.

Foreign Counterpart
No known foreign counterpart

Foreign Military Sales
None

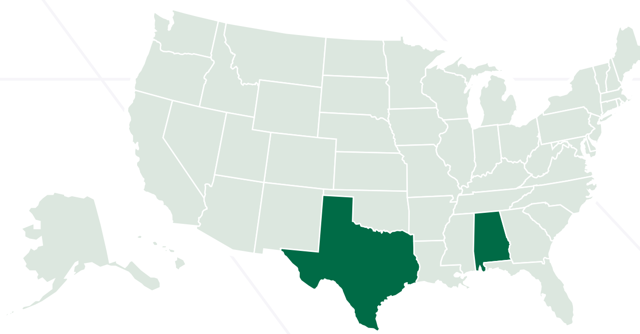
Program Status
- **3QFY97** Approved Operational Requirements Document.
- **4QFY97** Approved as Acquisition Category III Program.
- **FY99** Deployment of 1 ADA Brigade (partial), AAMDC update, ADA School update.
- **3QFY00** AMDWS V1.1 formal delivery.
- **4QFY00** 263d South Carolina Army Reserve National Guard (SCARNG) AAMDC initial training configuration delivered.
- **1QFY01** First delivery to Interim Brigade Combat Team (IBCT).
- **3QFY01** Supported DCX-1 with delivery of AMDWS V2.0 software via Interim Materiel Release.
- **3QFY01** Awarded contracts for design, integration, and fielding of the 263rd AAMDC AMDPCS and initial design of the 31st ADA Brigade AMDPCS (a component of the First Digitized Corps).
- **4QFY01** ADSI Certified for tactical digital information link (TADIL) A, TADIL B, and TADIL J message set implementation.

Projected Activities
- **2QFY02** AMDWS V1.0 software Materiel Release.
- **2QFY02** Contract award for development of AMDPCS for First Digitized Corps.
- **3QFY02** Second IBCT delivery.
- **3QFY02** Deployment of 263d SCARNG AAMDC tactical configuration.
- **3QFY02** AMDWS V1.1 software materiel release.

Prime Contractors
Sheltered Systems: TRW (Huntsville, AL); Brown International (Huntsville, AL)

AMDWS Software: TRW (Huntsville, AL)

ADSI Software and Hardware: APC (Austin, TX)



See appendix for list of subcontractors


ASAS Remote Workstation V4


ASAS Remote Workstation Training Station


Communications Control Set


ACT Enclave (Interior View)


ASAS Light

All Source Analysis System (ASAS)

Mission

Support the warfighting commander's battle management and information warfare process by fusing intelligence information to awareness of present enemy situation on the battlefield.

Description and Specifications

The All Source Analysis System (ASAS) is the intelligence and electronic warfare (IEW) component of the Army Battle Command System (ABCS). ASAS automates IEW collection management, intelligence preparation of the battlefield, and dissemination of intelligence products. It supports all echelons and functions in all phases of military operations across the full spectrum of conflict. ASAS supports current operations and future planning.

ASAS receives and correlates information from strategic and tactical intelligence sensors and sources. It automates sensor-to-shooter linkage by providing target nominations directly to the Advanced Field Artillery Tactical Data System (AFATDS). A mission-critical "system of systems," it is built upon the common hardware (CHS-2) platform and is tactically deployable. It operates at compartmented top-secret security levels and fuses signals intelligence (SIGINT), imagery intelligence (IMINT), counter intelligence/human intelligence (CI/HUMINT), measurement and signature intelligence (MASINT), and open sources.

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

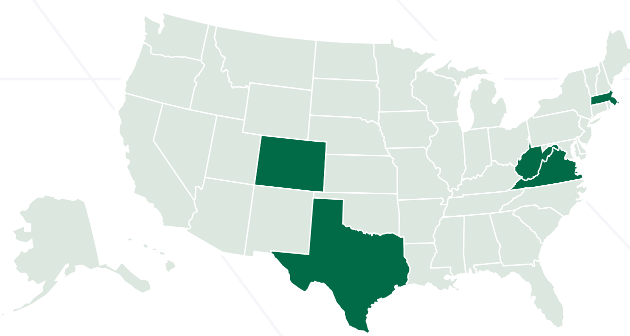
- Continued Army-wide fielding of ASAS Block II remote workstation (RWS) Version 4, ASAS-Light (ASAS-L), and Analysis Control Team - Enclave (ACT-E).
- Continued development of Block II Analysis and Control Element (ACE).
- Type-classified ASAS RWS Version 4 as "standard" (AN/TYQ-93 [V]1 and [V]2).
- ASAS Light, battalion-level laptop received a favorable fielding decision 1QFY01 and began fielding.

Projected Activities

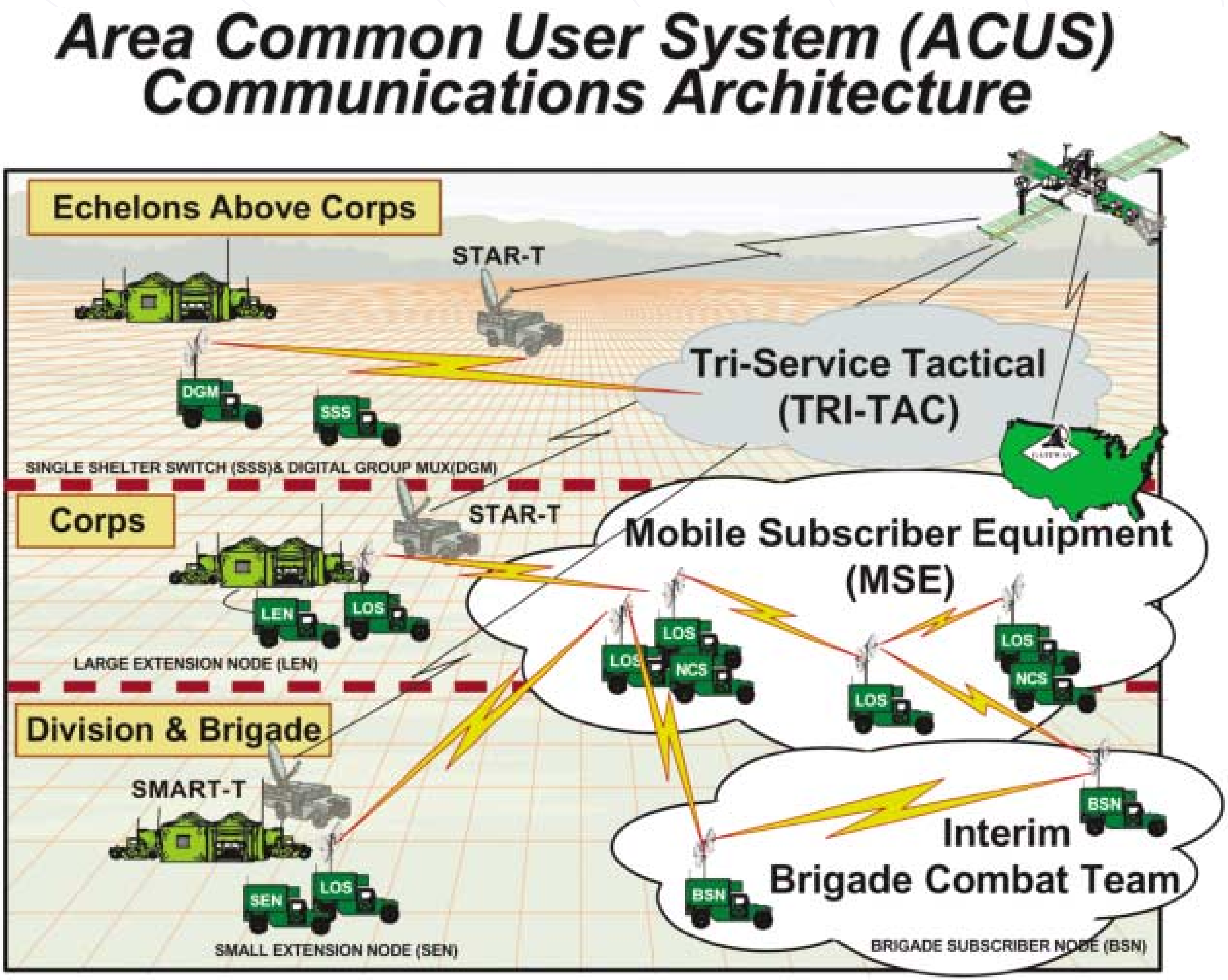
- Continue fielding ASAS Block II RWS, ASAS-L and ACT-E.
- Develop, test, and field the next iteration of ASAS Light and RWS Version 6.2.
- Initiate development of 7.X RWS capabilities.
- Continue developing Block II ACE.
- Continue to achieve greater joint interoperability.

Prime Contractors

Lockheed Martin (Littleton, CO); Austin Information Systems (Austin, TX); Electronic Warfare Associates (Herndon, VA)



See appendix for list of subcontractors


Area Common User System (ACUS) Communications Architecture
Echelons Above Corps
STAR-T
DGM
SSS
SINGLE SHELTER SWITCH (SSS)& DIGITAL GROUP MUX(DGM)
Tri-Service Tactical (TRI-TAC)
Corps
STAR-T
LEN
LOS
LARGE EXTENSION NODE (LEN)
Mobile Subscriber Equipment (MSE)
LOS
NCS
Division & Brigade
SMART-T
SEN
SMALL EXTENSION NODE (SEN)
BSN
Interim Brigade Combat Team
BRIGADE SUBSCRIBER NODE (BSN)

Mission

Support the power projection force of the 21st century, from sustaining base to foxhole, through planned modifications to the Area Common User System (ACUS) and support for its migration to the Army's Warfighter Information Network-Tactical (WIN-T) systems architecture.

Description and Specifications

The Area Common User System Modernization Program (ACUS MOD) consists of planned upgrades to the Mobile Subscriber Equipment (MSE) system at echelons corps and below, Tri-Service Tactical Communications (TRI-TAC) system at echelons above corps, and support for the Army's Transformation initiative through technology insertion. The ACUS MOD will implement a prioritized set of tactical operational requirements/ capabilities to support current and emerging Army XXI command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) initiatives. These capabilities include increased network services, information assurance, network management, enhanced reachback capabilities, and the transport velocity and capacity required to support the warfighter's increasing need to pass high-speed data, voice, video and imagery by the recapitalization of legacy systems.

The ACUS MOD Program will provide the following products to III Corps: Asynchronous Transfer Mode (ATM), High Capacity Line of Sight Radio (HCLOS), Information Assurance (IA), Battlefield Video TeleConferencing (BVTC), Secure Wireless local access network (SWLAN), and Network Operation Center-Vehicle (NOC-V).

The ACUS MOD Program will provide the following products to the Interim Brigade Combat Teams (IBCTs): Brigade Subscriber Node (BSN), NOC-V, BVTC, and SWLAN.

The ACUS MOD Program will provide the following products to the appropriate Army Signal units: Tactical High Speed Data Network 512 Kbps (THSDN), Single Shelter Switch (SSS), High Mobility Digital Group Multiplexer Assemblages (HMDA), TS-21 BLACKJACK (AN/UXC-10), and 8 Mbps HCLOS/THSDN.

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

Similar ATM and HCLOS upgrades are planned for Taiwan's Improved Mobile Subscriber Equipment (IMSE).

Program Status

- **FY01** ATM/HCLOS upgrades have been fielded to First Digitized Division and First Digitized Corps units, 124th Signal Battalion, 16th Signal Battalion at Ft. Hood, and 534th Signal Battalion at Ft. Carson.
- **FY01** BSN, NOC-V and BVTC programs fielded to IBCT1.
- **FY01** HMDA has completed fielding to Active Army, and initiated fielding to reserve components.
- **FY01** 1297 AN/UXC-10 fielded.
- **FY01** BVTC FDD and partial FDC fielded.

Projected Activities

- **FY02-FY04** Complete ATM/HCLOS and BVTC fieldings to FDC units.
- **FY02-FY05** Continue production of 152 additional HMDA systems and complete fielding to Reserve Component and training bases.
- **FY02** Field BSN, BVTC and NOC-V to IBCT2.
- **FY02-FY05** Continue fielding of AN/UXC-10 to active and reserve component units worldwide.
- **FY02** IA starts limited user testing and completion of fielding to 13th Signal Battalion.
- **FY02-FY03** Complete procurement and fielding of 512 Kbps THSDN.
- **FY02** Continue SSS production and fielding.

Prime Contractors

ATM, SSS, THSDN: General Dynamics (Taunton, MA)

HCLOS: CMC Electronics (Quebec, Canada)

HMDA: Laguna Industries (Laguna, NM)

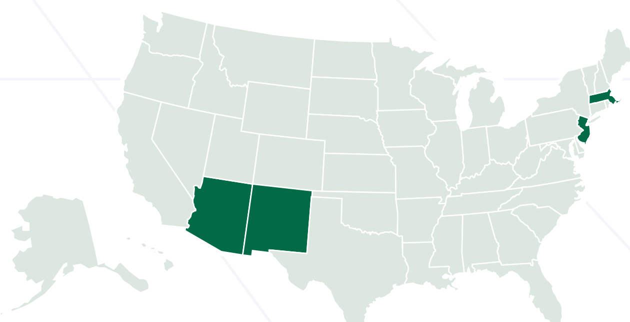
TS-21 Fax: GD/CRYPTEK (Taunton, MA)

BSN: CECOM (Ft. Monmouth, NJ)

NOC-V: CECOM (Ft. Monmouth, NJ)

BVTC: CECOM (Ft. Monmouth, NJ)

SWLAN: LOGICON (Scottsdale, AZ)



See appendix for list of subcontractors

Army Airborne Command and Control System (A2C2S)

Army Airborne Command and Control System (A2C2S)

Mission
Provide commanders, from maneuver brigade to echelons above corps, with an airborne tactical command post that affords continuous situational awareness (SA), robust communications and battlefield mobility.

Description and Specifications
The Army Airborne Command and Control System (A2C2S) is the Army's premiere airborne command and control (C2) system supporting echelons above corps, corps, division and maneuver brigade commanders. The A2C2S supports C2 requirements for missions ranging from low intensity humanitarian assistance to deep operations in high intensity conflict. Hosted in a UH-60 Black Hawk, this highly mobile tactical command post (TACCP) enables the maneuver commander to gain and maintain situational awareness (SA) and to execute C2, either from a static remote site or while traversing the expanded battlespace of a Force XXI Division at speeds up to 300 km per hour. To provide the commander with SA and C2, the A2C2S hosts selected Army Battle Command System (ABCS) programs and through the Tactical Internet, allows commanders to access, manipulate, store, manage and analyze situational awareness information, intelligence data and mission plans.

Additionally, the A2C2S's robust communications suite includes:

- Line-of-sight combat net radios consisting of single channel ground airborne radio system (SINCGARS), advanced system improvement program (ASIP), ultra high frequency (UHF) HAVEQUICK II, and civilian very high frequency (VHF), frequency modulation (FM) and amplitude modulation (AM) radios.
- Non-line-of-sight radios such as high frequency (HF) and satellite communications—demand assigned multiple access (SATCOM-DAMA), as well as wide-band digital radios, i.e., near term digital radio (NTDR) and enhanced position location reporting system (EPLRS) radio.
- These capabilities enable warfighters to exercise C2 of assigned and attached elements and to coordinate with adjacent, supported and supporting forces via voice and data equipment with battlefield information processing and connectivity. The A2C2S is critical to enhance the Battle Command Group's ability to effectively perform combat unit operations and serve as a force multiplier in Army XXI and the Objective Force.

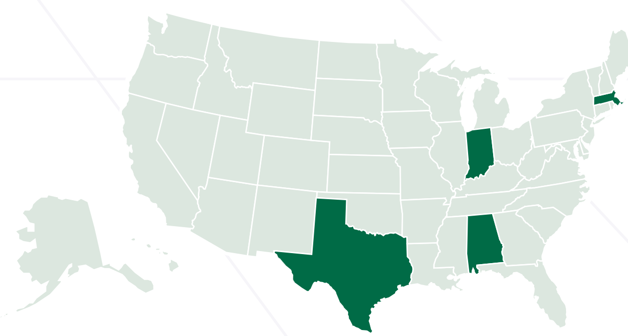
Foreign Counterpart
No known foreign counterpart

Foreign Military Sales
None

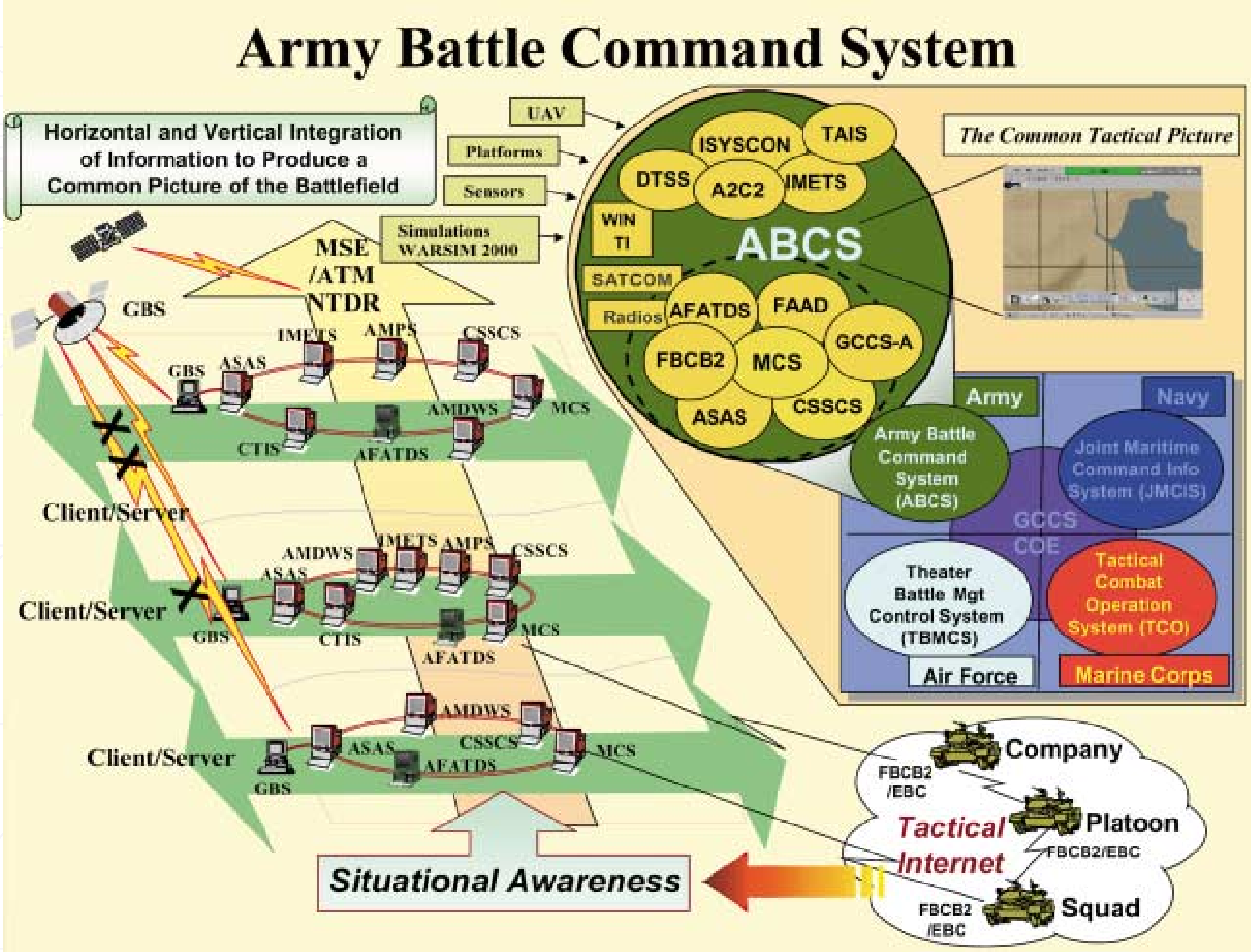
Program Status
- In system integration (Block I) sub-phase of system development and demonstration phase.
- Awarded fully competed contract for prototype development with options for low rate initial production, and one year of full rate production.
- Fabricated and delivered two A2C2S demonstrators to 4th Infantry Division and 101st Airborne Division (AASLT) for user evaluation.

Projected Activities
- Participate in NTC Rotation and 101st Golden Eagle Exercises with A2C2S Demonstrators.
- Development and fabrication of three A2C2S qualification prototypes.
- Prototype aircraft integration; system performance testing; limited user test.

Prime Contractors
Raytheon (Huntsville, AL; Waco, TX; Ft. Wayne, IN)



See appendix for list of subcontractors


Army Battle Command System
Horizontal and Vertical Integration of Information to Produce a Common Picture of the Battlefield
UAV
Platforms
Sensors
Simulations WARSIM 2000
MSE /ATM NTDR
GBS
IMETS
AMPS
CSSCS
ASAS
AMDWS
MCS
CTIS
AFATDS
Client/Server
Client/Server
Client/Server
ISYSCON
TAIS
DTSS
A2C2
IMETS
WIN TI
ABCS
SATCOM
Radios
AFATDS
FAAD
GCCS-A
FBCB2
MCS
ASAS
CSSCS
The Common Tactical Picture
Army
Navy
Army Battle Command System (ABCS)
Joint Maritime Command Info System (JMCIS)
GCCS COE
Theater Battle Mgt Control System (TBMCS)
Tactical Combat Operation System (TCO)
Air Force
Marine Corps
Company
FBCB2 /EBC
Tactical Internet
Platoon
FBCB2/EBC
Squad
FBCB2 /EBC
Situational Awareness

Army Battle Command System (ABCS)

Mission
Provide command and control applications and netted infrastructure to link battlefield automation assets, communications media, and operational facilities to support tactical commanders and their staffs in collecting and analyzing information, developing plans and orders, and monitoring the tactical battlefield while simultaneously planning future operations.

Description and Specifications
Army Battle Command System (ABCS) is the Army's tactical component of the Global Command and Control System (GCCS). The systems that comprise ABCS when fielded as a complex system of systems provide the core capability to facilitate world-class command, control, communications and computer surveillance and reconnaissance (C4ISR) on the battlefield among joint forces.

The ABCS consists of subsystems for the battlefield functional areas (BFAs), each of which supports and provides information to other systems, and provides situational awareness of the battlefield. By integrating the ABCS components through the Joint Common Database (JCDB), the common tactical picture can be viewed at any workstation, to the operator's specific requirements. In addition, ABCS subsystems provide an array of specialized capabilities and applications for commanders of diverse units at all levels. The adjacent table shows the ABCS subsystems and describes their functions.

Foreign Counterpart
No known foreign counterpart

Foreign Military Sales
None

Program Status
- ABCS is a system of systems, not a formal program.

Projected Activities
- Develop the ABCS infrastructure (e.g., JCDB, Command and Control Registry, and ABCS servers); Integrate ABCS subsystems into ABCS Version 6.2, 7.0, and beyond.

Prime Contractors
ABCS is a system of systems, not a formal program.

BFA	ABCS Subsystem	Functionality
Global C2	GCCS-A	Provides access to the Global Command and Control System.
Maneuver	MCS, FBCB2,	Plans, coordinates, and controls current and future operations. Develops situational awareness and the common tactical picture.
Intelligence	ASAS	Develops and provides assessments and pictures of enemy situations, from national, theater, and tactical sources.
Fires	AFATDS	Provides automated support for the planning, coordination, control, and execution of close fire support and deep fires from Army and joint assets.
Topographic	DTSS	Produces tactical topographic products, services including digital and full color paper maps of the battlefield.
Air Defense	AMDPCS	Integrates air defense units, sensors, and command and control centers into a system for defeating low-altitude air threat and enables the commander to plan and control the counter-air fight.
Combat Service	CSSCS	Tracks logistical, medical, financial, and personnel C2 information to assist decision-making and the battle planning process.
Weather	IMETS	Provides weather information, based on information from Air Weather Service and other sensors.
Airspace	TAIS	Provides the capability to plan air management movements and track aircraft during movement, and to enable deconfliction with weapons systems planning and operations.

See appendix for list of subcontractors

Army Common Ground Station (ACGS)

Army Common Ground Station (ACGS)

Mission
Provide long-range radar and other sensor surveillance battle management and targeting data to tactical commanders.

Description and Specifications
The Army Common Ground Station (CGS) is a key node on the digitized battlefield, receiving multiple national, theater, and tactical sensor inputs. The CGS is a mobile, tactical, multi-sensor ground station that receives, displays, processes, and disseminates targeting, battle management, and intelligence information to all echelons.

The primary sensor input is from the Joint Surveillance Target Attack Radar System (Joint STARS). Joint STARS is a joint Air Force/Army program, for which the Army provides the CGS as the ground component. The airborne platform is a United States Air Force E-8C with a multi-mode radar (wide-area surveillance and synthetic aperture modes), 18 operation-and-control consoles, a surveillance and control data link (SCDL), and secure communications. Orbiting a safe distance from the forward line of troops (FLOT), Joint STARS radar scans a wide area of the battlefield.

The radar data is received by Air Force and Army operators aboard the aircraft and downlinked to multiple CGSs via the SCDL. The information provides tactical commanders with near-real-time, wide-area surveillance, and deep-targeting data. The Joint STARS system can detect, locate, and assist in attacking both fixed and moving targets beyond the FLOT during daylight and darkness in nearly all weather conditions.

In addition to Joint STARS radar data, the CGS is capable of receiving and displaying Airborne Reconnaissance Low (ARL) radar data, unmanned aerial vehicle imagery, and signals intelligence data via an integrated joint tactical terminal. The CGS uses commercial off-the-shelf components, and is housed in a shelter on a High Mobility Multipurpose Wheeled Vehicle (HMMWV). The CGS provides increased functionality over the predecessor Ground Station Module (GSM), which it replaced in FY99.

Foreign Counterpart
Britain: Astor; France: Horizon; Italy: Creso

Foreign Military Sales
None

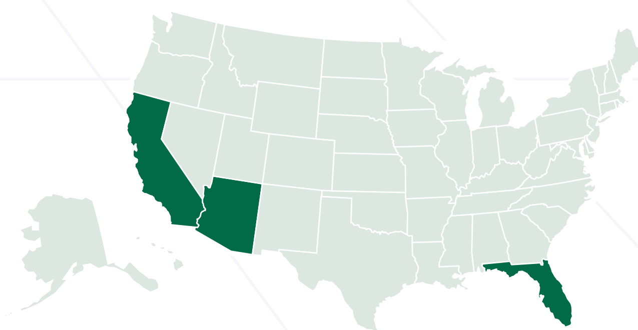
Program Status
- **1QFY96** Awarded CGS production contract.
- **2QFY97** Completed fielding of 16 MGSMs and 4 LGSMs.
- **3QFY99** Began initial fielding of CGS.
- **FY99** Completed replacement of all GSMs.
- **2QFY00** Conducted final phase of operational testing.
- **4QFY00** Approved for Milestone III, full rate production; CGS full-rate production decision (Milestone III).

Projected Activities
- **FY02** Continue fielding; continue Block 20 upgrades.

Prime Contractors
CGS: General Dynamics (Scottsdale, AZ)

Data Link: Cubic Defense Systems (San Diego, CA)

Aircraft: Northrop Grumman (Melbourne, FL)



See appendix for list of subcontractors


AKMS LCMS (EKMS)
COMSEC Account
Ruggedized Laptop
Tactical Printer
Ruggedized Laptop
NSA Key Processor
Data Transfer Devices

Army Key Management System (AKMS)

Mission

Enable frequency management and communications security (COMSEC) management planners and operators to provide highly responsive and reliable secure communications operations at both theater/tactical and strategic/sustaining base levels.

Description and Specifications

The Army Key Management System (AKMS) automates frequency management and COMSEC management operations. It eliminates paper-keying material, hardcopy-signal-operating instruction, and associated time- and resource-intensive courier distribution. The Local COMSEC Management System (LCMS) is the Army's position in the four-tiered Electronic Key Management System (EKMS). EKMS is a key management, COMSEC-materiel-distribution, and logistics-support system. The National Security Agency established the EKMS program to meet the following objectives:

- Supply electronic key to COMSEC devices in a secure and timely manner.
- Provide COMSEC managers with an automated system capable of handling ordering, generation, production, distribution, storage, security accounting, and access control.

Automated communications engineering software (ACES) is the frequency management portion of AKMS. ACES has been designated by the Military Communications Electronics Board as the joint standard for use by all services in development of frequency management and cryptonet planning. ACES will replace the legacy Revised Battlefield Electronic Communications-Electronic Operating Instructions System (RBECS) and will become the joint electronic interface to all spectrum management, Integrated System Control, Spectrum XXI, RBECS, Operational Tasking Command, Air Tasking Order (ATO), and Space ATO workstations.

The data transfer device is an improved net-control device to automate cryptonet control operations for communications networks employing electronically-keyed COMSEC equipment.

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

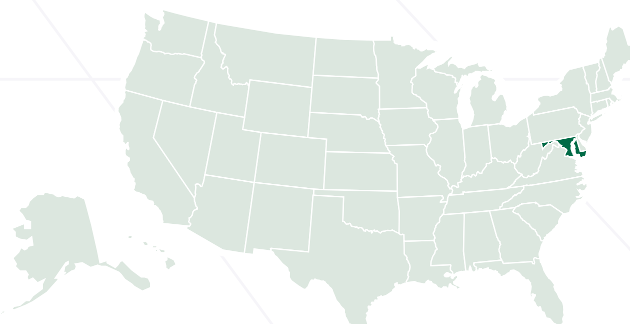
- **4QFY00** Commenced LCMS fielding.

Projected Activities

- **2QFY02** Commence ACES fielding.

Prime Contractors

Information Systems Support, Inc. (Bethesda, MD)



See appendix for list of subcontractors

Army Tactical Missile System (ATACMS) Blocks I and IA

Army Tactical Missile System (ATACMS) Blocks I and IA

Mission
Provide long-range surface-to-surface fire support for the Army's Objective Force and Joint Forces Commander.

Description and Specifications
The Army Tactical Missile System (ATACMS) is a Legacy to Objective Force Program. Blocks I and IA are ground-launched missile systems consisting of a surface-to-surface guided missile with an anti-personnel/anti-materiel (APAM) warhead. The ATACMS with APAM attacks soft targets at extended ranges. Targets include:

- Surface-to-surface missile sites
- Site defense systems
- Logistics elements
- Command, control and communications complexes.

The ATACMS missile is fired from the M270 Multiple Launch Rocket System (MLRS) launcher and the High Mobility Artillery Rocket System (HIMARS) to engage targets at ranges well beyond the capability of existing cannons and rockets. The ATACMS Block IA, with enhanced Global Positioning System (GPS) accuracy, has approximately twice the range of the ATACMS Block I. The ATACMS unitary quick reaction program (QRP) engages point targets with minimal collateral damage, at ranges comparable to the ATACMS Block IA. The ATACMS includes the following components: guided missile and launching assembly, M39; trainer, launch pod container, M68; training set, guided missile, M165; trainer, test device, guided missile, M78; modified M270 launcher; and ATACMS missile facilities.

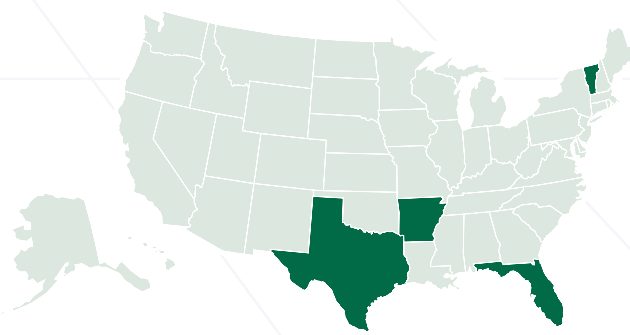
Foreign Counterpart
Afghanistan, Bulgaria, China, Egypt, France, Iran, Iraq, Libya, North Korea, Poland, Romania, Russia, Slovakia, Syria, Vietnam, Yemen.

Foreign Military Sales
Bahrain, Greece, South Korea, and Turkey.

Program Status
- **FY00** Completed deliveries for Block I foreign military sales (FMS) case to South Korea; Awarded Block IA full-rate production (FRP) III contract.
- **FY01** Awarded Block IA FRP IV contract; Awarded FMS case to Bahrain; Awarded ATACMS Unitary Quick Reaction Program (QRP) contract; Completed deliveries for Block I FMS case to Greece.

Projected Activities
- **FY02** Complete deliveries of ATACMS Unitary QRP.
- **FY03** Complete Block IA fielding.

Prime Contractors
Lockheed Martin (Dallas, TX; Horizon City, TX)



See appendix for list of subcontractors

Army Tactical Missile System – BAT (ATACMS–BAT) Block II

Army Tactical Missile System – BAT (ATACMS-BAT) Block II

Mission
Provide Army's Objective Force and Joint Forces Commanders the capability to delay, disrupt, or destroy moving enemy armored forces before they can influence the close battle; engage stationary enemy armored forces in their assembly areas; destroy, neutralize, or suppress threat surface-to-surface missile transporter-erector-launchers (SSM TELs), multiple rocket launchers (MRLs), and air defense artillery (ADA) systems throughout the battlespace.

Description and Specifications
The Army Tactical Missile System-BAT (ATACMS-BAT) Block II is a Legacy to Objective Force Program. The Block II is a modification of the currently fielded and combat-proven ATACMS Block I missile family and is launched from the Multiple Launch Rocket System (MLRS) M270A1 launcher and the High Mobility Artillery Rocket System (HIMARS).

The Block II will deliver 13 BAT or preplanned product improvement (P3I) BAT submunitions into deep battle at supersonic velocities. The BAT uses acoustic and infrared (IR) sensors to autonomously search for, detect, track, engage, and destroy moving tanks and other armored vehicles. The P3I BAT includes improved target acquisition capability with an upgraded dual mode seeker (imaging IR and millimeter wave radar) for increased lethality and increased ability to defeat countermeasures in near all-weather conditions. Incorporation of the P3I BAT will add the capability to engage cold, stationary enemy armored forces in their assembly areas and to destroy, neutralize, or suppress SSM TELs and MRLs (capable of launching weapons of mass destruction) and ADA systems throughout the battlespace.

Foreign Counterpart
No known foreign counterpart

Foreign Military Sales
None

Program Status
Block II/BAT:

- **FY01** Completed developmental testing; Awarded Block II/BAT low-rate initial production (LRIP) III contract.

Block II/P3I BAT:

- **FY01** Completed fifth captive flight test; delivered first multi-mode seeker and integrated it with a recoverable test submunition.

Projected Activities
Block II/BAT:

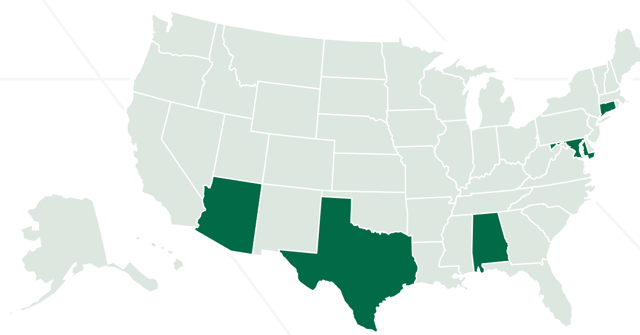
- **FY02** Complete LRIP I deliveries.
- **FY03** Complete LRIP II deliveries.
- **FY04** Complete LRIP III deliveries and transition to Block II/P3I BAT production.

Block II/P3I BAT:

- **FY02-03** Conduct continued development program testing.
- **FY04** Obtain Block II/P3I BAT LRIP decision from the Defense Acquisition Board.
- **FY04** Conduct Operational Test program for moving armor, cold stationary, and MRL/TEL target sets.
- **FY05** Obtain Block II/P3I BAT FRP decision from the Army Systems Acquisition Review Council.

Prime Contractors
Block II/BAT: Lockheed Martin (Dallas, TX; Horizon City, TX); Northrop Grumman (Huntsville, AL)

P3I BAT: Northrop Grumman (Baltimore, MD; Huntsville, AL)



See appendix for list of subcontractors

Automatic Chemical Agent Detector/Alarm (ACADA)

Automatic Chemical Agent Detector/Alarm (ACADA)

Mission
Detect nerve and blister chemical agents.

Description and Specifications
The Automatic Chemical Agent Detector/Alarm (ACADA) is an advanced point-sampling, chemical-agent alarm system. It is capable of simultaneously detecting, identifying and warning of standard blister and nerve agents. The ACADA is man-portable, operates independently after system start-up, and provides an audible and visual alarm. It is used by Army, Navy, Air Force, and Marine Corps units. ACADA replaces the M8A1 Alarm as an automatic point detector and augments the improved chemical agent monitor (ICAM) as a survey instrument. It can provide its warning automatically, using the multiple integrated chemical agent alarm, to communicate with battlefield data transfer and warning systems. ACADA does not require a specific military operator. Auxiliary equipment includes the M279 sampler probe, which allows for the first time capability to detect agents deposited on surfaces at cold temperatures.

Weight: 24 lbs (complete w/carry case, battery pack and M42 remote alarm)

Size: 7″ x 7″ x 14″ detector and battery box (14 lbs)

Detection capability: Nerve and blister agents

Battery life: Approximately 15 hours at 70°F

Foreign Counterpart
United Kingdom: GID-3.

Foreign Military Sales
None

Program Status
- **1QFY96** Awarded contract with priced options (through FY00).
- **3QFY97** Type-classified standard.
- **4QFY98** First unit equipped to the Army.
- **FY99** Initiated fielding to Air Force, Navy, and Marine Corps.
- **FY00-FY01** Continued fielding to Army.
- **FY01** Approved MS III for M279 Sampler Probe.

Projected Activities
- **FY02-FY03** Continue production deliveries and fieldings to Army units.

Prime Contractors
Graseby Dynamics, Ltd. (Watford, U.K.) - ACADA

See appendix for list of subcontractors


EXIT

Mission
Protect and enhance the warfighter's capabilities to operate in a biological warfare (BW) environment through the development, Food and Drug Administration (FDA) licensure, and production of medical biological defense (BD) products.

Description and Specifications
Immunization of U.S. forces with biological defense (BD) vaccines protects each individual against exposure to BW agents and allows commanders to continue operations. The Biological Vaccine Program/Joint Vaccine Acquisition Program (JVAP) is responsible for advanced development of biological defense vaccines invented in research laboratories by using a prime contractor for activities leading to FDA licensure and production of these vaccines.

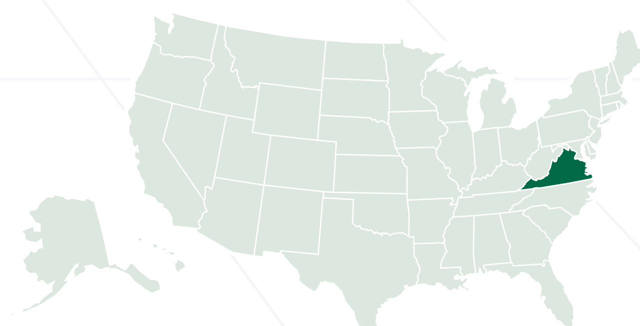
Foreign Counterpart
No known foreign counterpart

Foreign Military Sales
None

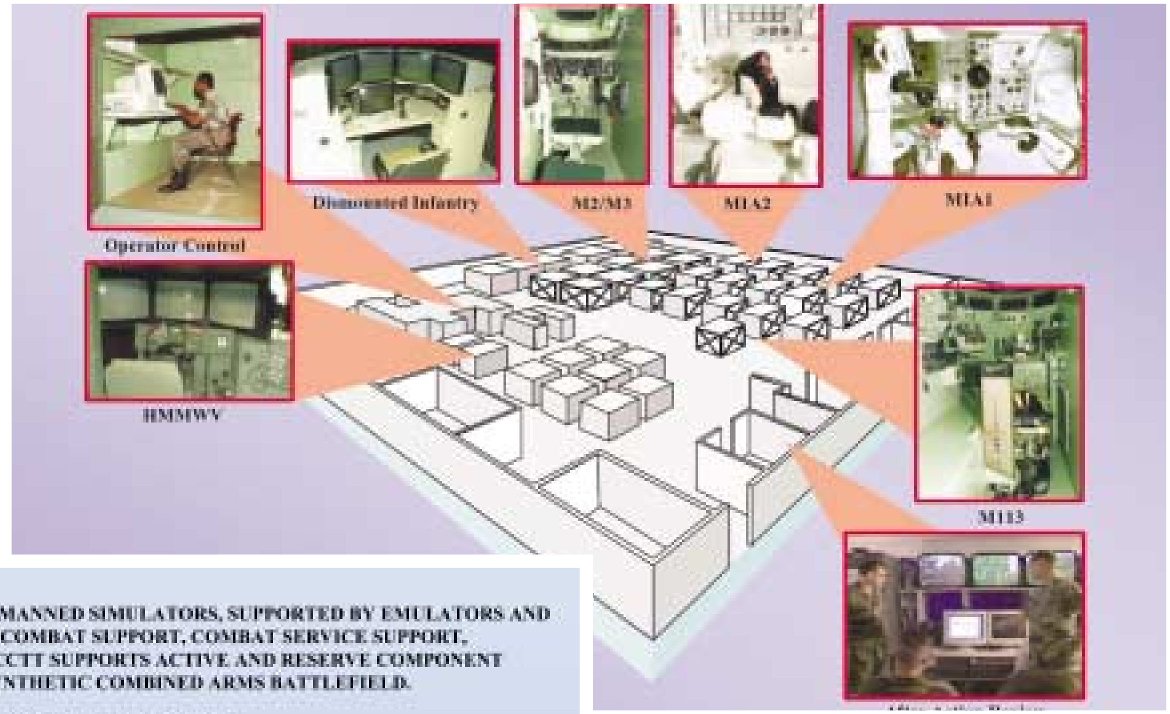
Program Status
- **1QFY98** Awarded cost-plus-award-fee prime systems contract to DynPort, LLC as the prime systems contractor.
- **FY00** Current good manufacturing practice (CGMP) pilot lot production and testing of Venezuelan Equine Encephalitis (VEE) IA vaccine.
- **FY00-01** Continued developmental work for consistency model and surrogate model of Tularemia vaccine; Continued manufacturing development and Phase 1 clinical trails of pilot lot for Tularemia vaccine.

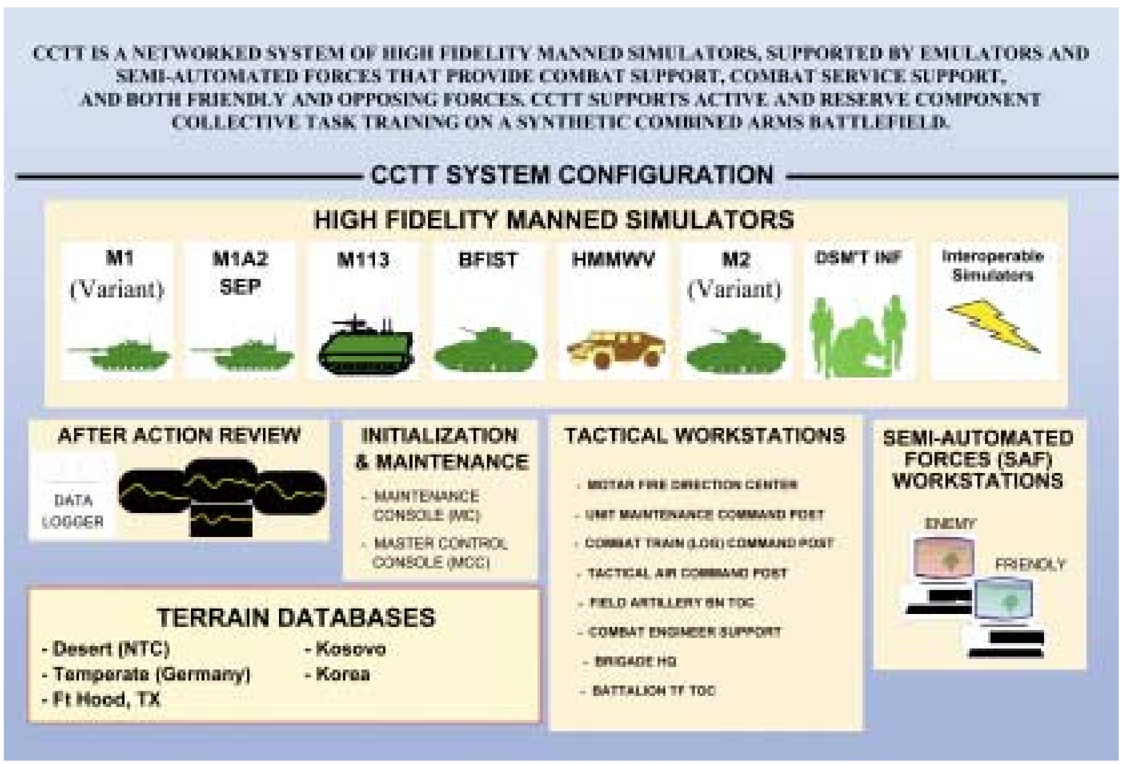
Projected Activities
- **4QFY02** Milestone C Smallpox vaccine.
- **3QFY03** Milestone B Tularemia vaccine.

Prime Contractors
DynPort, LLC (Reston, VA)



See appendix for list of subcontractors


Operator Control
Dismounted Infantry
M2/M3
M1A2
M1A1
HMMWV
M113


CCTT IS A NETWORKED SYSTEM OF HIGH FIDELITY MANNED SIMULATORS, SUPPORTED BY EMULATORS AND SEMI-AUTOMATED FORCES THAT PROVIDE COMBAT SUPPORT, COMBAT SERVICE SUPPORT, AND BOTH FRIENDLY AND OPPOSING FORCES. CCTT SUPPORTS ACTIVE AND RESERVE COMPONENT COLLECTIVE TASK TRAINING ON A SYNTHETIC COMBINED ARMS BATTLEFIELD.
CCTT SYSTEM CONFIGURATION
HIGH FIDELITY MANNED SIMULATORS
M1 (Variant)
M1A2 SEP
M113
BFIST
HMMWV
M2 (Variant)
DSM'T INF
Interoperable Simulators
AFTER ACTION REVIEW
DATA LOGGER
INITIALIZATION & MAINTENANCE
- MAINTENANCE CONSOLE (MC)
- MASTER CONTROL CONSOLE (MCC)
TACTICAL WORKSTATIONS
- MOTAR FIRE DIRECTION CENTER
- UNIT MAINTENANCE COMMAND POST
- COMBAT TRAIN (LOG) COMMAND POST
- TACTICAL AIR COMMAND POST
- FIELD ARTILLERY BN TOC
- COMBAT ENGINEER SUPPORT
- BRIGADE HQ
- BATTALION TF TOC
SEMI-AUTOMATED FORCES (SAF) WORKSTATIONS
ENEMY
FRIENDLY
TERRAIN DATABASES
- Desert (NTC)
- Temperate (Germany)
- Ft Hood, TX
- Kosovo
- Korea

Close Combat Tactical Trainer (CCTT)

Mission

Provide collective training of crews, units, and staffs within a combined arms synthetic environment.

Description and Specifications

Close Combat Tactical Trainer (CCTT) is the first member of the Combined Arms Tactical Trainer (CATT) family of virtual, distributed interactive simulations for collective training. It supports training of armor, mechanized infantry, and cavalry units from platoon through battalion/squadron echelon, including the staff. The primary training audience operates from both full-crew simulators and mock-up command posts. Crewed simulators—M1A1, M1A1D, M1A2, M1A2SEP, M2A2ODS/D, M2/3A2 BFV, FIST-V, BFIST, M113A3, and HMMWV—are of sufficient fidelity for individuals and crews to accomplish their collective missions. Infantry platoon and squad leaders can also exit the Bradley Fighting Vehicle (BFV) and move to a dismounted infantry workstation with control of virtual dismounted elements. Ft. Hood CCTTs are equipped with Force XXI battle command brigade-and-below (FBCB2) in support of the Army's First Digitized Division.

The training audience uses computer workstations located in mock-up command posts to provide artillery, mortar, combat engineers, and logistics units to the synthetic battlefield. Semi-automated forces workstations provide additional supporting units (i.e., aviation and air defense artillery) and all opposing forces. Thus, while maneuver units (combat crews and battalion-level staff members) constitute the CCTT primary training audience, all battlefield operating systems are represented in the simulation to ensure effective simulation within a combined arms training environment that encompasses daylight, night, and fog conditions. CCTT's visual and terrain databases currently support desert (National Training Center); temperate (Germany); Ft. Hood, TX; Kosovo; and Korea. Mobile versions of CCTT are used to train the National Guard and can deploy with a unit during contingency operations.

Foreign Counterpart

The United Kingdom Ministry of Defense is developing a counterpart system called United Kingdom-Combined Arms Tactical Trainer (U.K.-CATT). The United States and the United Kingdom have a memorandum of understanding that covers cooperative development of CCTT and U.K.-CATT.

Foreign Military Sales

None

Program Status

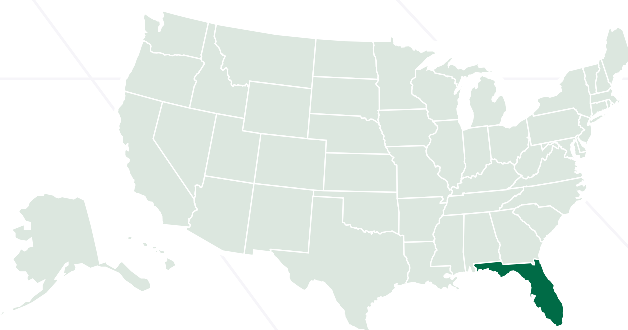
- **2QFY98** Low-rate initial production award for FY99 deliveries to Ft. Knox, Ft. Benning, and mobile sets.
- **1QFY99** Achieved Army System Acquisition Review Committee Milestone III.
- **FY99** Began fielding CCTT XXI (FBCB2) to Ft. Hood, TX.
- **2QFY99** Full-rate production award for FY00 deliveries to Ft. Stewart, Ft. Hood, Ft. Carson, and mobiles.
- **2QFY00** Full-rate production award for FY01 deliveries to Ft. Carson, Ft. Riley, and mobiles.
- **1QFY01** Full-rate production award for FY02 deliveries to Ft. Riley and OCONUS sites.
- **1QFY02** Full-rate production award for FY03 deliveries to round out existing fixed sites plus mobiles.
- **2QFY02** Field Bradley FIST to Ft. Stewart, GA; field CCTT FOX NBC Recon systems manned module to Ft. Hood, TX and deliver Korea terrain database to all CCTT sites.

Projected Activities

- Continue full-rate production of CCTT modules (continental U.S. and outside continental U.S.) and additional mobile sets.
- **FY02** Begin development of additional Germany terrain database.
- **FY02** and beyond: Continue CCTT weapons systems currency and interoperability efforts and continue CCTT trainer unique performance improvement upgrades.

Prime Contractors

Lockheed Martin (Orlando, FL)



See appendix for list of subcontractors

Mission

Act as the key system in air cavalry and attack helicopter formations; conduct reconnaissance, security, and attack operations across the battlespace, day or night, and in adverse weather conditions.

Description and Specifications

The Comanche (RAH-66) is the Army's next-generation helicopter, designed to perform armed reconnaissance, and attack missions. The Comanche will significantly expand the Army's capability to conduct reconnaissance, security, and attack operations in all battlefield environments, day or night, and during adverse weather using its advanced electro-optical sensors, aided-target recognition, and sensor-weapons integration.

Comanche's digital communications capacity will enhance the Army's capability to win the battlefield information war, and allow interface with the Joint Surveillance and Target Attack Radar System (JSTARS) and other joint sensors and weapons platforms. Comanche's design for rapid re-arm, refuel, and repair will increase the tempo of operations. With low observability, target recognition, and digitized communications, the Comanche can conduct deep, precision-strike missions against time-sensitive targets. The Comanche will replace three types of helicopters (AH-1, OH-58, and AH-64) that currently perform the reconnaissance and attack missions.

Crew: 2 pilots (single-pilot operable)

Speed: 175 kt (dash)

Endurance: 2.5 hr (plus 20-minute reserve)

Armament: 20mm turreted gatling gun, air-to-ground rockets and missiles.

Mission equipment package: Advanced electro-optical target acquisition and designation system, aided target recognition, and helmet-mounted display. One third of aircraft fleet will include the fire control radar (FCR) and every aircraft will have provisions to incorporate the FCR.

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

- **4QFY01** Comanche program completed the aircraft preliminary design review (PDR).
- **Current** Comanche is in the last phase of development, with two prototype aircraft in active flight test status. During engineering, manufacturing and development (EMD), the program plan is to build an additional five test aircraft to complete development testing, followed by eight aircraft that will be devoted to initial pilot training and operational testing.

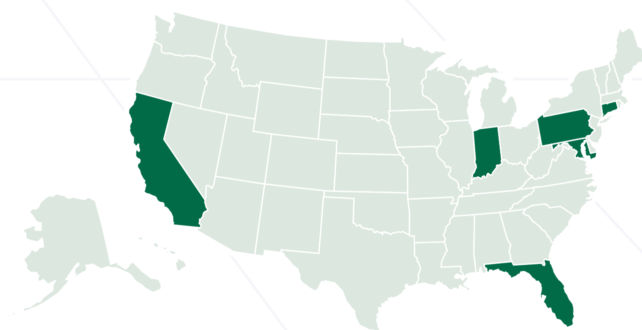
Projected Activities

- **4QFY02** Aircraft Critical Design Review.
- **2QFY04** Begin flight testing of EMD aircraft.
- **2QFY05** Low-rate initial production decision scheduled.
- **3QFY06** Conduct initial operational test and evaluation.
- **1QFY07** Milestone III decision scheduled.

Prime Contractors

Aircraft: Boeing and Sikorsky Team (Philadelphia, PA; Stratford, CT)

Engine: Light Helicopter Turbine Engine Company (LHTEC); Honeywell/Rolls-Royce Team (Indianapolis, IN)



See appendix for list of subcontractors

Combat Service Support Control System (CSSCS)

Combat Service Support Control System (CSSCS)

Mission
Provide timely situational awareness and force projection information to support current operations and sustain future operations as a key logistics enabler for the Army Transformation.

Description and Specifications
The Combat Service Support Control System (CSSCS) is a decision-support system that assists commanders and their staffs in planning and executing combat service support (CSS) operations. The CSSCS will rapidly collect, store, analyze, and disseminate critical logistics, medical, and personnel information. Currently, commanders and staffs manually gather, correlate, and analyze volumes of data from the existing Program Executive Office for Enterprise Information Systems (PEO EIS) and the Force XXI Battle Command Brigade-and-Below (FBCB2). The CSSCS extracts summary information from the PEO EIS, accepts input from other elements of the CSS community, and exchanges information with other automated systems to evaluate CSS information about the force-level commander's tactical courses of action.

The CSSCS is the CSS component of the Army Battle Command System (ABCS), as well as a key logistical enabler in the Brigade Combat Teams (BCTs) for the Army's Transformation efforts. It is organic to CSS battalions and headquarters staffs, within the maneuver brigades (and battalions in ABCS-equipped units), separate brigades, armored cavalry regiments, divisions, corps, and echelons above corps (EAC). The CSSCS is comprised of computer units, common operating environment software, and CSSCS-unique software. The CSSCS is deployable in a table-top configuration, with or without storage/transit cases, and can also be housed in the family of Standardized Integrated Command Post Systems (SICPS). The current sources of CSS data are the PEO EIS, FBCB2 and manual entry. The Global Combat Support System-Army (GCSS-A) will be a future data source.

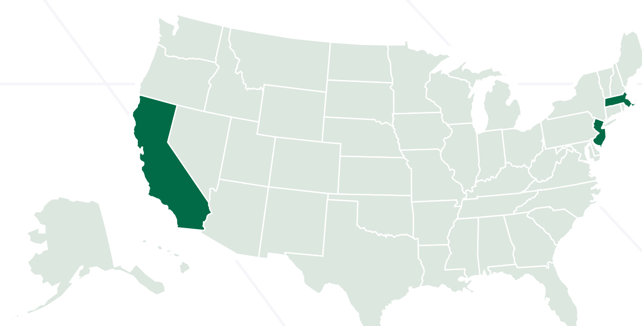
Foreign Counterpart
PM CSSCS has participated with Germany, France, and Great Britain in the Quadrilateral Army Communications Information Systems Interoperability Group. In addition, Canada and Australia are monitoring the status of CSSCS development.

Foreign Military Sales
None

Program Status
- CSSCS Version 3 software provided an initial operational capability at division and corps level and included initial horizontal interoperability with ABCS systems.
- Current Version 4 extends CSSCS to EAC, and provides additional capabilities. Version 4 has been fielded to III Corps, XVIII Airborne Corps and to Task Force Eagle in Bosnia. Fielding to V Corps is ongoing.
- Version 5 will extend CSSCS capabilities with improved logistics tracking and combat power functionality and joint, allied, and coalition forces connectivity.

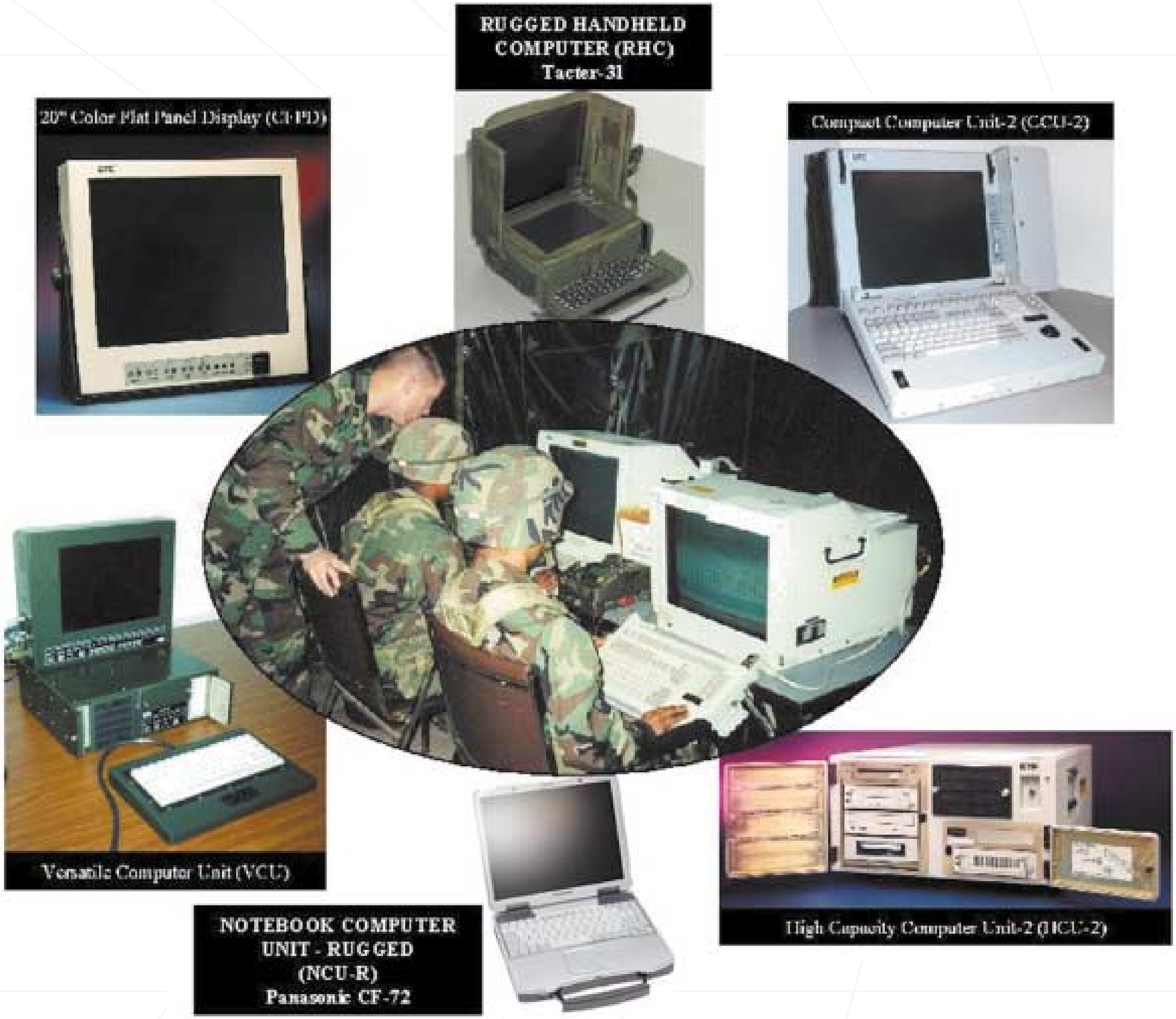
Projected Activities
- **FY02-03** - Field Version 4 to V Corps, U.S. Army Europe, Interim Brigade Combat Team (IBCT) 2; III Corps, 1CD, XVIII ABN Corps and U.S. Army Special Operations Command. Develop Version 5; Support Army warfighting experiments.

Prime Contractors
TRW (Carson, CA); Lockheed Martin (Tinton Falls, NJ); General Dynamics (Taunton, MA)



See appendix for list of subcontractors

Common Hardware Systems (CHS)



Common Hardware Systems (CHS)

Mission

Provide common hardware systems for the Army Battle Command System (ABCS) programs, which include the Global Command and Control System-Army (GCCS-A) and Army Tactical Command and Control System (ATCCS) as well as other Army and joint programs for use in system development and fielding.

Description and Specifications

The Common Hardware Systems (CHS) program improves interoperability and lowers life-cycle costs by standardizing battlefield command and control automation through centralized purchases of non-developmental items, standardized protocols, and reusable commercial common software. The program provides CHS to more than 80 Army and Department of Defense customers. The contractor provides worldwide repair and maintenance and logistics support through strategically located regional support centers established to meet the needs of tactical military units. The CHS-2 program provides the following hardware: CHS-2 Rugged Handheld Computer (RHC); High Capacity Computer Unit (HCU-2); Compact Computer Unit (CCU-2); Versatile Computer Unit (VCU-1 and VCU-2); Color Flat Panel Displays; and Notebook Computer Unit-Rugged (NCU-R). This program provides commercial, ruggedized and highly ruggedized hardware versions of computers, peripherals and networking devices. It also provides commercial industry based logistics support that meets the unique requirements of the tactical military units.

CHS software: UNIX O/S (Solaris, Solaris X86, SCO UNIX), RDBMS (Informix), Communications Protocols, GKS, PHIGS, PEX; ADA Bindings; DCE; DDN/MPN X.25; C/C++ Compiler; DOS; Purging SW.

	CHS-2(RHC)	CHS-2(HCU-2)	CHS-2(CCU-2)
Processor:	Pentium III	UltraSPARC IIi	UltraSPARC IIi/Axi
MHz clock:	500	440	440
RAM:	128MB	1GB	1GB

	CHS-2(VCU-2)	CHS-2(VCU-1)	CHS-2(NCU-R)
Processor:	UltraSPARC	IIi/Axi Pentium III	Pentium III
MHz clock:	440	933	850
RAM:	1GB	1GB	384MB

CHS-2 hardware can be procured in Version 1 (commercial workstations), Version 2 (ruggedized workstations), and Version 3 (MIL-SPEC Rugged Handheld Unit).

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

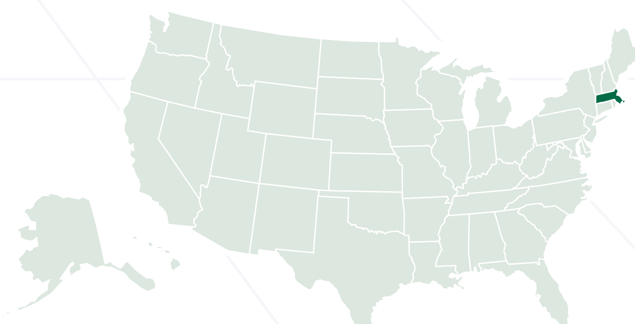
- **April 10, 1995** General Dynamics (formerly GTE) awarded CHS-2 contract, a follow-on to the CHS-1 contract.
- **4QFY00** Version 2 rugged hardware is fully qualified and was successfully used during the Advanced Warfighting Experiment (AWE) Task Force XXI exercise, Division AWE at Ft. Hood, TX and the Joint Contingency Force Exercise at Ft. Polk in September 2000.
- **April 2001** CHS-2 hardware was successfully used during Division Capstone Exercise (DCX) 1 at Ft. Irwin, CA.
- **September 2001** CHS-2 systems were successfully utilized during DCX-II at Ft. Hood, TX.

Projected Activities

- **2QFY02** Commence CHS-2 program year 8.

Prime Contractors

CHS-2: General Dynamics (Taunton, MA)



See appendix for list of subcontractors

Common Missile

Mission
Provide a common missile to meet the infantry, aviation, and armor requirements of the next-generation missile system.

Description and Specifications
Expanding regional threats coupled with the expiration of the current stockpile require action to maintain the effectiveness of both Army ground and air combat units. A single missile to accomplish both ground and air missions provides flexibility during combat operations and enables the best use of limited development funds. The Common Missile will provide Bradley-equipped forces, the Apache Attack Helicopter (AH-64), the Comanche Reconnaissance Helicopter (RAH-66) and Future Combat System with an enhanced fire-and-forget capability, greatly increasing weapon system effectiveness and soldier and aircraft survivability.

The Common Missile will effectively engage and destroy a variety of targets, ranging from buildings/bunkers to advanced armor on the digital battlefield well into the future. The Common Missile will be designed and tested to achieve the following:

- Enhanced fire-and-forget capability
- Increased range
- Increased survivability (both missile and platform)
- Decreased weight
- Decreased size
- Modularity for future technology-based enhancements.

The Common Missile will be compatible with existing ground and air launch platforms as well as the Army's Future Combat System and the RAH-66.

Diameter: 6 in

Weight: ~70 lbs

Length: ~50 in

Foreign Counterpart
No known foreign counterpart

Foreign Military Sales
None

Program Status
- **FY99** Selected value tri-mode seeker concept based on tradeoff studies.
- **FY00** Identified alternative seeker that offers highest payoff; Investigated controllable thrust propulsion designs.
- **FY01** Initiated common missile preliminary design and risk reduction efforts.
- **FY02-03** Tri-Mode seeker development; Controllable propulsion development; Warhead development; System design and integration.

Projected Activities
- **FY04** Milestones I/II.
- **FY04-07** Integration testing.
- **FY08-10** Low rate initial production.
- **FY08-17** Technology insertion.

Prime Contractors
To be determined

See appendix for list of subcontractors

Crusader

Crusader

Mission
Provide direct and general fire support to maneuver forces in full spectrum operations on the future battlefield through a "system of systems" howitzer and resupply vehicle.

Description and Specifications
Crusader is the Army's next generation self-propelled howitzer, designed to support the Army's Transformation and provide significant increases in artillery survivability, lethality, mobility, and operational effectiveness. Displacing the M109A6, Paladin Self-Propelled Howitzer, and the M992A2, Field Artillery Ammunition Supply Vehicle (FAASV), Crusader is the fully automated cannon artillery system to support the IBCT Counterattack Corps and is a critical technology enabler for future systems. Beginning in 2008, the Army will field 480 systems consisting of a 155mm self-propelled howitzer (SPH) supported by a tracked or wheeled resupply vehicle (RSV-T or RSV-W) (50/50 mix).

In addition to strategic deployability (two howitzers transportable in the C-17), other key features of the Crusader include: the XM297E2 integral mid-wall cooled cannon that enables sustained high rates of fire; a reliable, fully automated ammunition handling and loading system designed to use the modular artillery charge system and automatic inductively set multi-option fuze; a state-of-the-art cockpit with embedded command and control that allows the crew to exploit the system's full battle capabilities; embedded training and diagnostics to facilitate skill retention and maintenance support; composite armor; a suite of survivability features to protect the soldier and the system; and the LV100-5 gas turbine engine (common with the Abrams tank) that provides the improved mobility to keep pace with the supported maneuver force.

RSVs enable automatic, reciprocal transfer of ammunition, data and fuel to the SPH or another RSV to maintain required firing rates and enable autonomous operations while capitalizing on the cost and operational advantages of common components. RSV critical technologies and capabilities include an automated docking boom, ammunition resupply system, fuel transfer system, improved mobility, and embedded training and diagnostics.

	SPH	**RSV-T**	**RSV-W**
Curb Weight:	40 tons	36 tons	33.3 tons
Length:	7.53 m	7.53 m	11.03 m
Width:	3.31 m	3.31 m	2.44 m
Height:	3.00 m	3.00 m	3.59 m
Cross-Country Mobility:	39-48 kph	39-48 kph	64 kph
Armament:	Cooled 155mm		
Max Range:	40-50km (assisted)		
Rate of Fire/Resupply:	10-12 rounds/min	48 rounds/10.4min	48 rounds/10.4min
Crew:	3	3	3

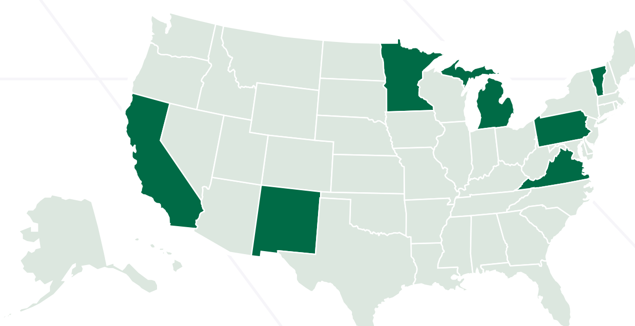
Foreign Counterpart
No known foreign counterpart

Foreign Military Sales
None

Program Status
- **1QFY95** Approved to commence program definition and risk reduction (PDRR) phase.
- **2QFY98** In-process review completed and manufacture of the PDRR prototype systems begun.
- **3QFY99** Delivered first RSV prototype.
- **2QFY00** Delivered first prototype howitzer SPH 1.
- **1QFY02** Successful preliminary design review.
- **1QFY02** More than 4000 rounds fired from SPH 1.

Projected Activities
- **2QFY03** Milestone B scheduled.
- **2QFY06** Milestone C scheduled.
- **3QFY08** First unit equipped.

Prime Contractors
United Defense, L.P. (Minneapolis, MN)



See appendix for list of subcontractors

Digital Topographic Support System (DTSS)

Digital Topographic Support System (DTSS)

Mission

Provide commanders at brigade through echelons above corps (EAC) with automated terrain analysis, terrain database management, and graphics reproduction in support of intelligence preparation of the battlefield, command and control, terrain visualization, and weapons and sensor systems.

Description and Specifications

The Digital Topographic Support System (DTSS) is a standard, automated, tactical combat support system capable of receiving, formatting, creating, manipulating, merging, updating, storing and retrieving digital topographic data and then processing these data into hard copy and soft copy topographic products. DTSS accepts topographic and multi-spectral imagery data from the standard digital databases of National Imagery and Mapping Agency (NIMA), commercial sources and national technical means assets.

DTSS functional capabilities include creation of intervisibility, mobility, environmental, three-dimension terrain visualization, and special-purpose products; and the creation, augmentation, modification and management of topographic data. The DTSS will provide updated map background, terrain intelligence, and terrain data management to all the Army Battle Command System (ABCS) workstations on the battlefield and accept terrain intelligence/data updates from these systems.

DTSS uses the latest commercial off-the-shelf (COTS) technology in printers, scanners and computer workstations combined with image processing and geographic information system software. DTSS will be supported by environmental control units, generators, and communication equipment that are part of the standard Army inventory. The tactical system will be produced in two variants: heavy (DTSS-H) and light (DTSS-L). DTSS-H is housed in a 20 ft international standards organization (ISO) shelter and mounted on a standard 5-ton truck. DTSS-L is housed in a lightweight multipurpose shelter mounted on a High Mobility Multipurpose Wheeled Vehicle (HMMWV). In addition to the tactical configurations, two additional variants of the DTSS are available to provide terrain analysis and topographic support. The DTSS-Deployable (DTSS-D) consists of transportable workstations and peripherals that can be set up to augment the tactical configurations. The DTSS-D provides a COTS configuration that is capable of operating all of the terrain analysis software. The DTSS-B is a garrison configuration and is designed to augment NIMA digital topographic data generation capabilities at the echelons above corps level.

Foreign Counterpart

United Kingdom: TACISYS; Australia: TOPOSS; Canada: DGSS

Foreign Military Sales

None

Program Status

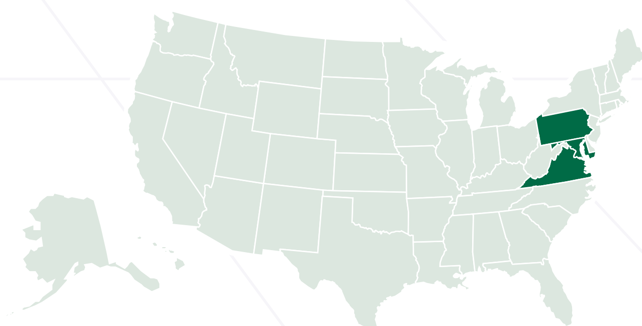
- **2QFY01** Conducted DTSS-B upgrade architecture analysis.
- **3QFY01** Procured and fielded 83 DTSS-D systems.
- **4QFY01** Procured and fielded 16 DTSS-L systems.
- Continued DTSS Pre-Planned Product Improvement (P3I) program.
- **1-2QFY02** Upgrade institutional training classroom at Defense Mapping School.

Projected Activities

- **3QFY02** Procure and field upgraded DTSS-B (3 systems).
- **4QFY02** Procure and field DTSS-L (16 systems).
- Participate in Millenium Challenge 02.

Prime Contractors

Litton/TASC (Reston, VA); Sechan Electronics (Lititz, PA)



See appendix for list of subcontractors

Division TUAV-SIGINT Program (DTSP)

– Electronic Mapping of the Battlefield (Primary Mission)
– Electronic Attack
– Providing "Actionable" Intelligence for Targeting Process
– Remote Signal Collection for Off-Platform Signal Exploitation

Tactical SIGINT for the 21st Century

Division TUAV-SIGINT Program (DTSP)

Mission
Provide electronic support (ES) and battlefield emitter mapping, resulting in a near-real time (NRT) common operating picture (COP) of the electronic battlefield; detect, locate, and identify radio frequency (RF) emitters in the high frequency (HF), very high frequency (VHF), ultra high frequency (UHF), and super high frequency (SHF) communications bands.

Description and Specifications
The Division TUAV-SIGINT Program (DTSP) is the division-level tactical unmanned aerial vehicle (TUAV) Signals Intelligence and Electronic Warfare (SIGINT/EW) system that supports Army Transformation and information dominance. DTSP will provide division and armored cavalry regiment (ACR) commanders with a general support, deep-looking aerial SIGINT/EW platform capable of detecting, identifying, locating, and mapping RF emitters throughout the tactical area of operations (AO). The major DTSP components include SIGINT/EW sensors, the unmanned aerial vehicle (UAV) system, and ground control and processing workstations. The DTSP's ground control element will remotely task and control the DTSP aerial platform and receivers, and will provide command control, collection, processing, electronic mapping, analysis, and reporting. DTSP ground control element serves as the tactical SIGINT preprocessor before reporting this data to the all source analysis system (ASAS).

The DTSP will exploit select threat RF emitters and map threat communications networks, counter-mortar/battery and ground surveillance radar, throughout the Division's/ACR's AOs. The DTSP will also be capable of electronic attack (EA) against selected threat emitters. The DTSP ground control element will produce an organic Division/ACR SIGINT analysis capability that will provide tasking for the DTSP aerial sensor, and will process their detection, identification, and location data. The ground control element will also operate on-the-move (OTM) to monitor the electronic battlefield status during displacement operations. The DTSP control will provide NRT inputs to the COP through its interface with the:

- Division/ACR Analysis and Control Element (ACE) ASAS
- Maneuver brigade Analysis and Control Team's (ACT) Common Ground Station (CGS)
- ASAS Remote Work Stations.

During its development, the DTSP will use open systems architecture, modular design, and nonproprietary industry standards to enable evolutionary growth and expansion through circuit card assemblies and software rather than wholesale hardware replacement. The DTSP was restructured from the Army's Prophet Air program in FY00 to counter changes in the threat environment, as well as to incorporate the Army's latest tactical SIGINT/EW doctrine. DTSP will meet the new Army Vision/Transformation/Objective Force requirements, based on the Army's affordability, operational risk and priority assessments. The DTSP requirement will be included as an appendix to the TUAV Operational Requirements Document (ORD). Sweden recently procured an aerial SIGINT/EW capability.

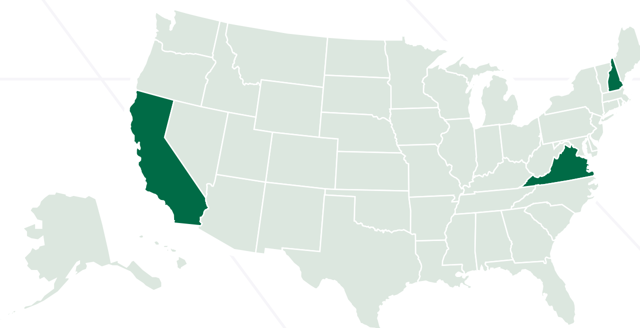
Foreign Counterpart
No known foreign counterpart

Foreign Military Sales
None

Program Status
- Draft DTSP requirement and concept of operations (CONOPS) prepared.
- **3QFY01** Decision review for DTSP entry into component advanced development (CAD).
- **4QFY01** Three separate CAD contracts awarded.
- DTSP payload design and integration onto a Hunter Unmanned Aerial Vehicle (UAV) platform.

Projected Activities
- Continue the CAD concept and technology development phase; leading to FY03 static ground and UAV ES payload demonstrations by the three CAD contractors.
- Complete DTSP requirements for attachment to the Extended Range/Multi-Purpose UAV ORD.

Prime Contractors
Applied Signal Technology, Inc. (Sunnyvale, CA); BAE Systems (Nashua, NH); and Raytheon (Falls Church, VA)



See appendix for list of subcontractors

Driver’s Vision Enhancer (DVE)

Driver's Vision Enhancer (DVE)

Mission

Provide drivers of combat and tactical wheeled vehicles with unparalleled flexibility to continue day or night operations during periods of severely degraded visual conditions caused by smoke, fog, dust, or similar conditions.

Description and Specifications

The AN/VAS-5 Driver's Vision Enhancer (DVE) thermal viewing system increases vehicle mobility under very poor driving conditions. The DVE provides mobility under the same conditions as the target engagement sensors, enabling a critical "go" versus "no go" capability. The DVE provides situational awareness, target and ambush detection, and vehicle tracking. For the first time, combat service support vehicles will be able to keep up with the warfighter. The DVE's cost is very low, compared to other forward-looking infrared (FLIR) sensors.

The DVE's sensor module consists of a second-generation FLIR. The output device consists of a high-quality commercial flat-panel display and control module. The system is driver-friendly and easy to use. DVE video imagery may be distributed to other vehicle crew members. The DVE also contains a data port for linkage to the digitized battlefield. The DVE can be easily adapted to any current or future U.S. or NATO combat and tactical-wheeled vehicles, due to its horizontal technology integration features. These vehicles include the following:

- Abrams M1A2 and USMC M1A1
- Bradley M2A2 ODS and M2A3
- Family of Medium Tactical Vehicles (FMTV)
- Heavy Equipment Transporter System (HETS)
- Heavy Expanded Mobility Tactical Truck (HEMTT)
- Hercules
- High Mobility Multipurpose Wheeled Vehicle (HMMWV)
- M58 Smoke Vehicle
- M56 Smoke Vehicle
- Paladin
- Palletized Loading System (PLS)
- United States Marine Corps (USMC) Amphibious Assault Vehicle
- USMC Armored Vehicle Launched Bridge
- USMC Light Armored Vehicle
- Wolverine.

Foreign Counterpart

Thompson: CSF's Driver's Viewer Aid

Foreign Military Sales

None

Program Status

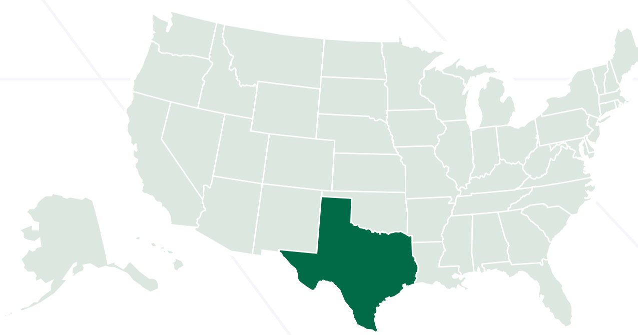
- **3QFY97** Fielded to Bradley M2A2 ODS.
- **3QFY98** Awarded three-year multi-year firm fixed price.
- **4QFY98** Full materiel release M58.
- **1QFY99** Fielded to M58.
- **2QFY99** Second program year award; DVE build.
- **1QFY00** DVE test: production qualification testing.
- **2QFY00** DVE test: USMC operational test and evaluation; PM M56 customer test.
- **1QFY01** DVE deliveries.
- **1QFY02** Third program year award.

Projected Activities

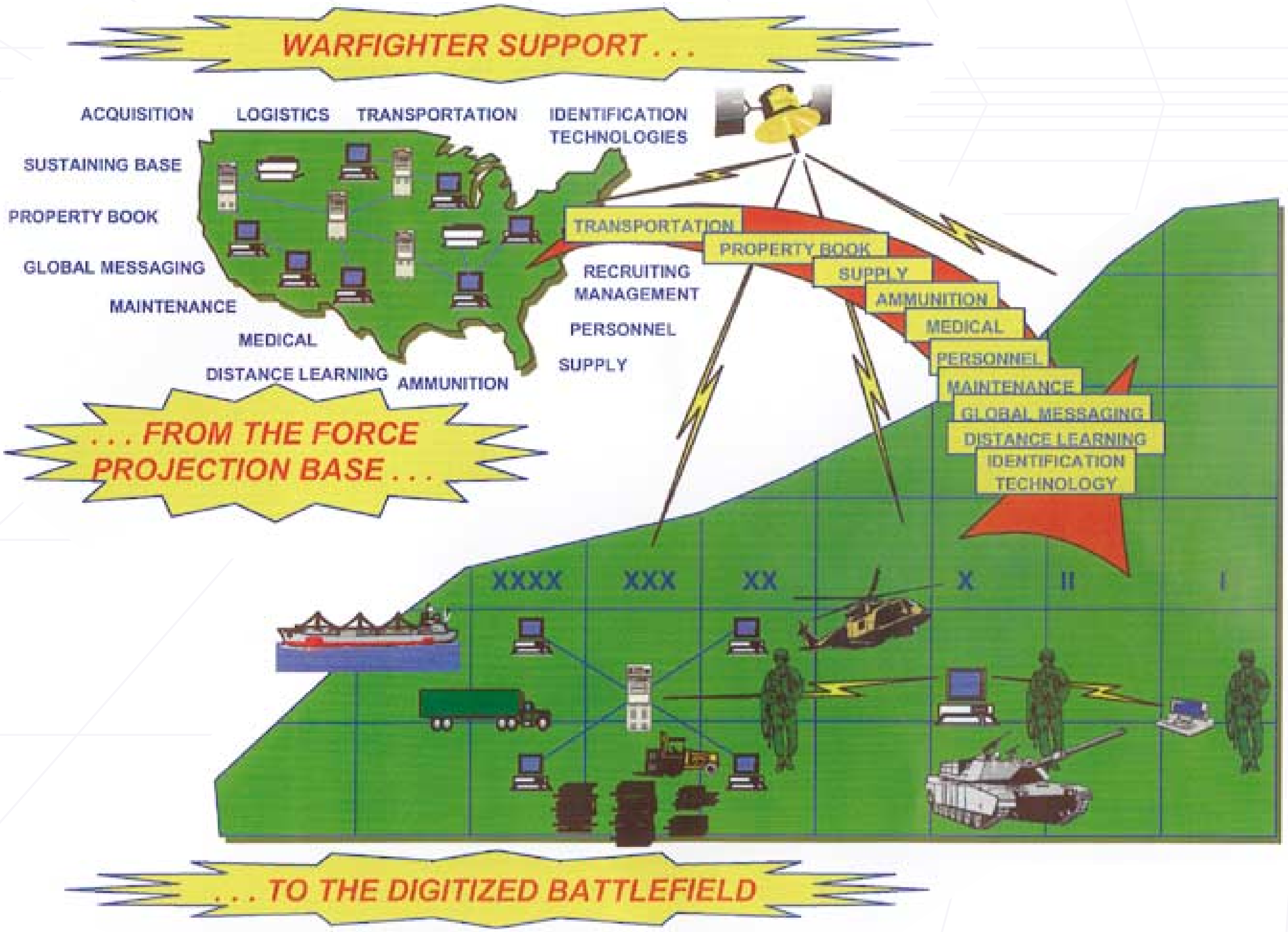
- **2QFY02** Interim Brigade Combat Team award; USMC fielding.
- **3QFY02** M56 Fielding.
- **3QFY02 - 4QFY02** FCT and second source qualification testing.
- **1QFY03** Improved driver's vision system production qualification.

Prime Contractors

Raytheon (Dallas, TX)



See appendix for list of subcontractors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LOGISTICS
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Enterprise Information Systems (EIS)

Mission

Provide effective, multi-functional, leading edge, global information solutions to guarantee information dominance across the operational spectrum.

Description and Specifications

The Program Executive Office for Enterprise Information Systems (PEO EIS) acquires and fields information technology and communications systems that support tactical, strategic and sustaining base operations. Current programs include: Joint Computer-Aided Acquisition and Logistics Support (JCALS), Transportation Coordinators' Automated Information for Movement System II (TC-AIMS II), the Army Distance Learning Program (TADLP), Medical Communications for Combat Casualty Care (MC4), Defense Communications and Army Switched Systems (DCASS), Defense Communications and Army Transmission Systems (DCATS), Information Management and Telecommunications Pentagon Renovation (IM&TPR) and the Army Human Resources System (AHRS).

Legacy logistics automation systems that will migrate into the Global Combat Support–Army/Tactical (GCS-A/T) system include: Standard Army Ammunition System (SAAS), Standard Army Maintenance System (SAMS), Standard Army Retail Supply System (SARSS) and the Unit Level Logistics Systems (ULLS). GCS-A/T is a key enabler for Army Transformation.

EIS provides Army enterprise system infrastructure capabilities in the form of the Defense Messaging System-Army (DMS-A) and the Tactical Messaging System (TMS); Army Knowledge Management (AKM); Windows 2000/Active Directory; server consolidation; secure electronic transactions–devices (SET-D), which provides for public key infrastructure (PKI); and the common access card (CAC). EIS also includes:

- Army Small Computer Program (ASCP)
- Automatic Identification Technologies (AIT)
- Civilian Personnel Office Regionalization (CPO-R) Project
- Combat Service Support Automated Information Systems Interface (CAISI)
- Hazardous Substance Management System (HSMS)
- Installation Support Modules (ISM)
- Movement Tracking System (MTS)
- Technology Applications Office (TAO).

The systems that comprise EIS are in various stages of life-cycle management, utilizing commercial hardware infrastructure and software technology acquired from various contract vehicles. EIS programs meet Joint Technical Architecture requirements. Government and contractor agencies provide system development, test, deployment and training support.

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

- Continue fielding DCASS and DCATS communications infrastructure and transmission systems worldwide. JCALS system fielding continues toward supporting an objective of more than 400 DOD sites for the joint technical manual. TADLP is fielding the training delivery system for World Wide Web-based access. MTS is providing initial in-transit visibility of combat support vehicles.

Projected Activities

- **FY02–03** GCS-A progressing toward initial operational testing and fielding. TC-AIMS II continues testing with expected fielding. The MC4 program is undergoing alpha/beta testing in preparation for fielding. DMS-A implements new Defense Information Systems Agency software and completes TMS system testing and initial unit fielding. Army enterprise efforts progress with MDW implementation of Windows 2000/Active Directory, Server consolidation and acquisition planning for Army-wide execution.

Prime Contractors

JCALS: Computer Sciences Corporation (Morristown, NJ)

DMS-Army: Lockheed Martin (Bethesda, MD)

DCASS: General Dynamics (Needham, MA) & Lucent Technologies (Greensboro, NC)

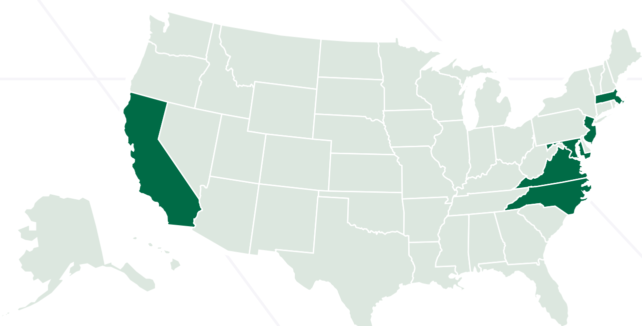
GCS-Army: TRW (Chester, VA & Los Angeles, CA)

MTS: COMTECH Mobile Datacom Corp (Germantown, MD)

DCATS: Harris (Palm Bay, FL) & Northrup Grumman (Linthicum, MD)

IM&TPR: General Dynamics (Needham, MA)

TADLP: ACS (Virginia Beach, VA); PriceWaterhouseCoopers (Fairfax, VA)

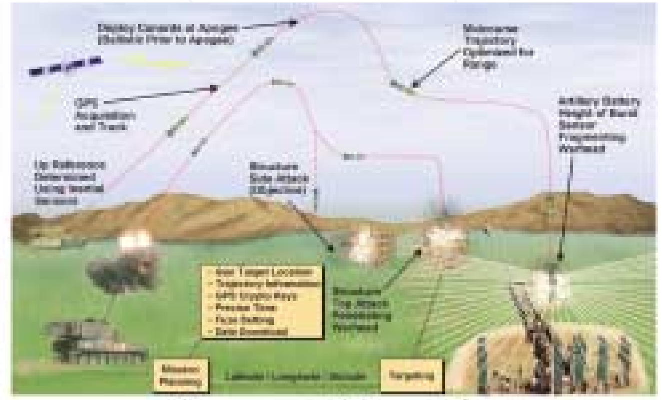


See appendix for list of subcontractors

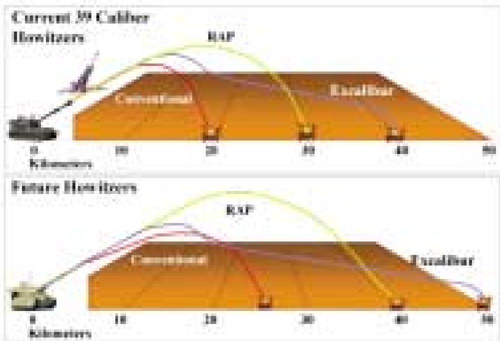
Flight Test

Current Configuration

Excalibur Family of Precision Guided Artillery Projectiles

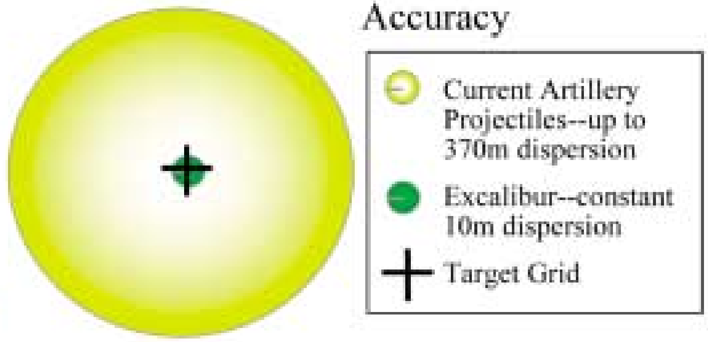


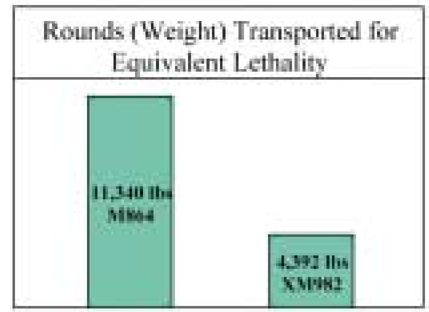
Concept of Operations



Range Improvements

Accuracy





Effectiveness / Lethality

YPG Projectile Test Firings

Guidance Electronics Gun Hardening Tests

Mission

Provide the maneuver force with improved fire support through a precision-guided, extended-range, accuracy-enhancing, collateral damage-reducing, more lethal family of 155mm artillery projectiles.

Description and Specifications

The Excalibur, XM982, is a family of precision, 155mm modular projectiles that incorporates three unique payloads. The unitary warhead will be used against various personnel, equipment, and building targets in urban or complex terrain. A sensor fuzed munition (SFM) variant will be used to engage self-propelled artillery and armored targets. The dual purpose improved conventional munitions (DPICM) variant will be used against personnel, materiel, light armored targets, and other area targets. Excalibur permits our 155mm artillery systems to regain range overmatch while precisely engaging targets at ranges up to 50km. Excalibur is a force multiplier that increases lethality while reducing the logistical burden for legacy, interim and objective forces.

An internal Global Positioning System (GPS) updates the inertial navigation system, providing precision guidance and improved accuracy. The GPS features a selective-availability, anti-spoofing module and an anti-jam system. Excalibur is effective in all weather and terrain. It contains a fuzing system that is set by either an enhanced portable inductive artillery fuze setter or Crusader's inductive automated fuze setter. The target, platform location, and GPS-specific data are inductively entered into the projectile's mission computer, located in the nose of the projectile.

Upon firing, Excalibur will determine its up-reference using inertial sensors. A trajectory correction to optimize range takes place midway between apogee and the target. Upon arrival, the trajectory is optimized for the Unitary, SFM or DPICM payload variants.

Caliber: 155mm

Weight: 106 lbs

Max range: 40 km (from M109A6 and XM777 digital howitzers), 50 km (from Crusader)

Number of submunitions: 1 Unitary/rd, or 2 SFMs/rd, or 64 DPICMs/rd.

Foreign Counterpart

Congress directed the U.S. Marine Corps in FY99 to pursue an international cooperative program with the Government of Sweden to explore a Trajectory Correctable Munition (TCM) concept proposed by BOFORS and their U.S. partner, Science and Applied Technologies, Inc. A number of other European countries expressed interest in joining the Excalibur or TCM efforts.

Foreign Military Sales

None

Program Status

- **January 23, 1998** Award contract for DPICM engineering and manufacturing development (EMD).
- **FY01** Transitioned to Unitary Variant.
- **Current** Continue systems development and demonstration.

Projected Activities

- **1QFY04** Conclude development testing.
- **3QFY04** Commence low-rate initial production.
- **4QFY06** Achieve initial operational capability.
- **1QFY07** Commence full-rate production.

Prime Contractors

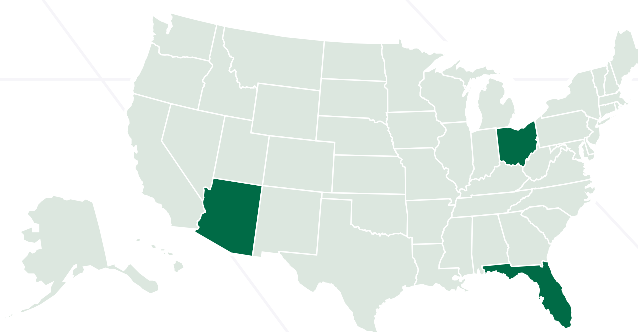
General Dynamics Ordnance and Tactical Systems (St. Petersburg, FL)

General Dynamics Versatron (Healdsburg, CA)

L-3 Communications Interstate Electronics Corporation (Anaheim, CA)

L-3 KDI (Cincinnati, OH)

Raytheon (Tucson, AZ)



See appendix for list of subcontractors

Family of Medium Tactical Vehicles (FMTV)

Family of Medium Tactical Vehicles (FMTV)

Mission

Fill the Army's medium tactical-wheeled vehicle requirements.

Description and Specifications

The Family of Medium Tactical Vehicles (FMTV) is a series of vehicles based on a common chassis, which vary by payload and mission requirements. The LMTV has a 2-1/2 ton capacity (cargo and van models). The MTV has a 5-ton capacity (cargo and long wheelbase cargo with and without materiel handling equipment (MHE), tractor, van, wrecker, and dump truck models). Three truck variants and two companion trailers, with the same cube and payload capacity as their prime movers, provide air drop capability. It replaces obsolete and maintenance-intensive trucks currently in the fleet and performs local and line haul, unit mobility, unit resupply, and other missions in combat, combat support and combat service support units. It is rapidly deployable worldwide and operates on primary and secondary roads, trails, and cross-country terrain, in all climatic conditions. Commonality of parts across truck chassis variants significantly reduces the logistics burden and operating and support costs. New vehicle applications are being developed to meet new requirements. Units are equipped with FMTVs at more than 68 different locations worldwide, and more than 12,800 vehicles have been fielded as of 23 October 2001.

In 1998, the Army awarded a new four-year, multi-year-plus-option-year contract with Stewart & Stevenson Services to produce the FMTV A1 series. The FMTV A1 includes a 1999 Environmental Protection Agency-certified engine, upgraded transmission, electronic data bus, an anti-lock brake system and interactive electronic technical manuals.

In April 2001, the Army awarded two contracts under the A1 Competitive Rebuy Competitive Evaluation phase (Phase I), to Stewart & Stevenson Services and Oshkosh Truck Corporation.

	LMTV A1 Cargo	MTV A1 Cargo
Payload:	5,000 lbs	10,000 lbs
Towed load:	12,000 lbs	21,000 lbs
Engine:	JP8 fuel	JP8 fuel
Transmission:	Automatic	Automatic
Horsepower:	275	330
Drive:	4x4	6x6

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

Saudi Arabia, Taiwan, Greece, Thailand and Macedonia have executed Foreign Military Sales actions. Egypt, Taiwan, Israel, Argentina and Poland have submitted requests.

Program Status

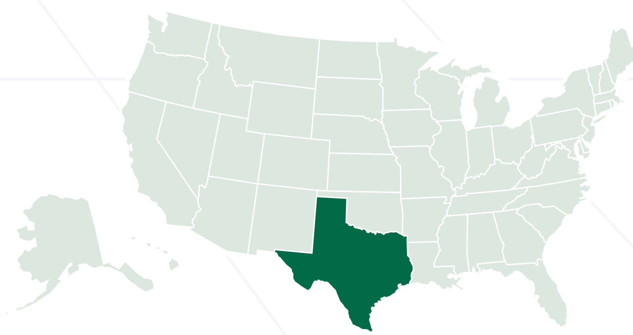
- **2QFY96** First unit equipped (FUE) A0 at Ft. Bragg, NC.
- **4QFY00** FUE A1 at Ft. Carson, CO.
- **1QFY02** Scheduled completion for A0 fielding.

Projected Activities

- Fielding will continue to the Army's highest priority "first-to-fight" units.
- Army and PM-MTV are continuing acquisition actions for a third major buy under the FMTV A1 Competitive Rebuy program.
- **2QFY03** downselect to one contractor for A1 Competitive Rebuy, Production award (Phase II).

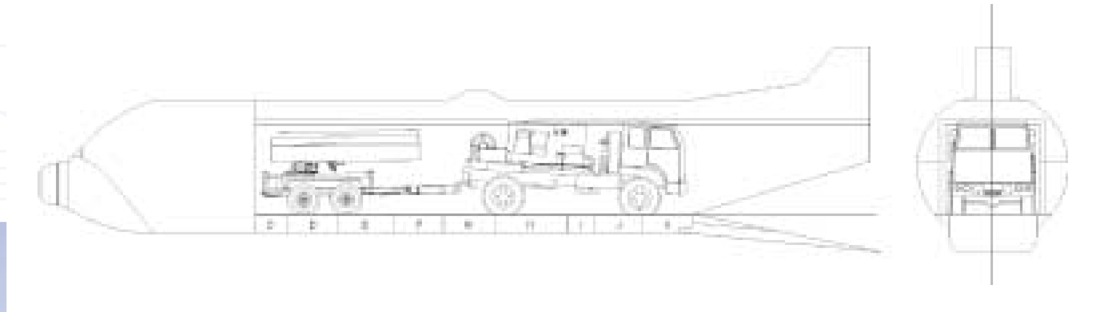
Prime Contractors

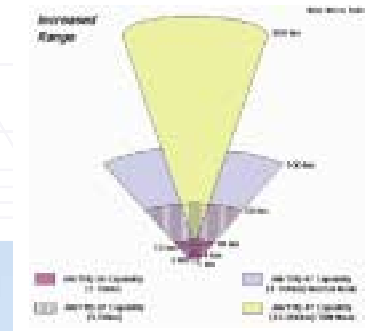
Stewart & Stevenson Services, Inc. (Sealy, TX)



See appendix for list of subcontractors

Firefinder (AN/TPQ-47)





Firefinder (AN/TPQ-47)

Mission
Provide next-generation weapons-locating radar to detect and locate enemy artillery, rockets, and missiles quickly and accurately enough to permit immediate engagement.

Description and Specifications
The Firefinder (AN/TPQ-47) system will replace the AN/TPQ-37 artillery locating radar. The AN/TPQ-47 system will increase the current AN/TPQ-37 artillery range performance, while improving accuracy and target throughput. The AN/TPQ-47 will also provide a new capability for missile and rocket detection at ranges out to more than 300 kilometers.

The system will use the standard Army light medium tactical vehicles in a highly mobile, transportable, and survivable configuration that reduces crew size from 12 to 9. The system will be capable of roll-on/roll-off from a single C-130 aircraft for rapid deployment. The program will further leverage the AN/TPQ-36 (V)8 electronics upgrade program by using the same operations central shelter currently being fielded.

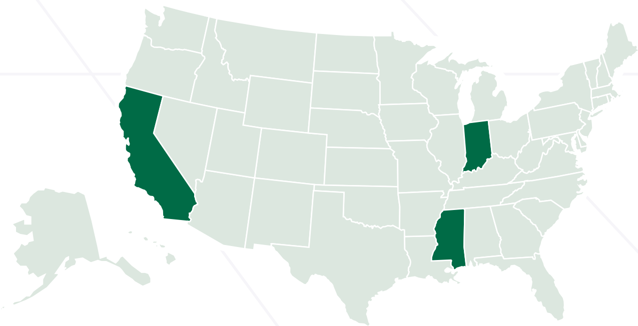
Foreign Counterpart
European Consortium-Sponsored EuroArt Cobra; Ukraine: 1L220-U

Foreign Military Sales
None

Program Status
- **1QFY99** Milestone II approval.
- **4QFY99** Start of contract effort with Raytheon Systems; Established partnering agreement with Raytheon.
- **4QFY00** Conducted preliminary design review.
- **3QFY01** Conducted critical design review.

Projected Activities
- **4QFY03** Begin developmental test.
- **1QFY05** Conduct limited user test; Award low rate initial production contract.

Prime Contractors
Raytheon (El Segundo, CA; Forest, MS; Fort Wayne, IN); TRW (Carson, CA)



See appendix for list of subcontractors

Force XXI Battle Command Brigade-and-Below (FBCB2)

Force XXI Battle Command Brigade-and-Below (FBCB2)

Mission
Provide battle command and situational awareness information from brigade level down to the soldier/platform level.

Description and Specifications
The Force XXI Battle Command Brigade-and-Below (FBCB2) forms the principal digital command and control system for the Army at brigade levels and below. The FBCB2 system is designated Acquisition Category 1D and is in the engineering and manufacturing development (EMD) phase. Applique hardware and software are integrated into the various platforms at brigade and below, as well as appropriate division and corps slices necessary to support brigade operations. The system features the interconnection of platforms through a communications infrastructure called the Tactical Internet to transmit situational awareness data.

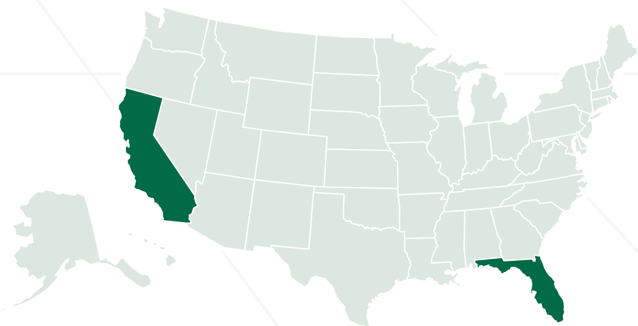
Foreign Counterpart
No known foreign counterpart

Foreign Military Sales
None

Program Status
- **2QFY01** Completed Field Test 3.
- **3QFY01** Awarded follow-on system engineering and integration (SE&I) contract; participated in Division Capstone Exercise (DCX-1)/conducted limited user test (LUT) 2; delivered version 3.4 software.
- **1QFY02** Completed Field Test 4.
- **1QFY02** Conducted LUT 2A.

Projected Activities
- **2QFY02** Award LRIP Option 2.
- **3QFY02** Conduct Field Test 5.
- **1QFY03** Conduct Initial Operational Test & Evaluation (IOTE).
- **2QFY03** Award LRIP Option 3.
- **4QFY03** Full Rate Production (FRP) Decision Review.

Prime Contractors
TRW (Carson, CA)



See appendix for list of subcontractors

Forward Area Air Defense Command and Control (FAAD C2)

Forward Area Air Defense Command and Control (FAAD C2)

Mission

Collect, digitally process, and disseminate real-time target cuing and tracking information, common tactical air picture, and command, control, and intelligence (C2I) information to all Short Range Air Defense (SHORAD) weapons (Avenger, Bradley Linebacker, Manportable Air Defense System [MANPADS], joint and combined arms); provide joint C2 interoperability and horizontal integration with PATRIOT, THAAD, MEADS, and SHORAD weapon systems.

Description and Specifications

The Forward Area Air Defense Command and Control (FAAD C2), a battle management/command, control, communications, computers, and intelligence (BM/C4I) system, provides critical, automated air track information (friendly and enemy aircraft, cruise missiles, and unmanned aerial vehicles [UAVs]) to support air defense weapon systems engagement operations and to provide air situation awareness to other Army Battle Command Systems (ABCS). Unique FAAD C2 software provides mission capability by integrating FAAD C2 Engagement Operations software with the following systems:

- Joint Tactical Information Distribution System (JTIDS)
- Single Channel Ground and Airborne Radio System (SINCGARS)
- Enhanced Position Location Reporting System (EPLRS)
- Global Positioning System (GPS)
- Airborne Warning and Control System (AWACS)
- Sentinel
- Army Battle Command System (ABCS) architecture.

FAAD C2 is the first system to digitize for the First Digitized Division (FDD)/III Corps.

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

FMS case with Egypt in process

Program Status

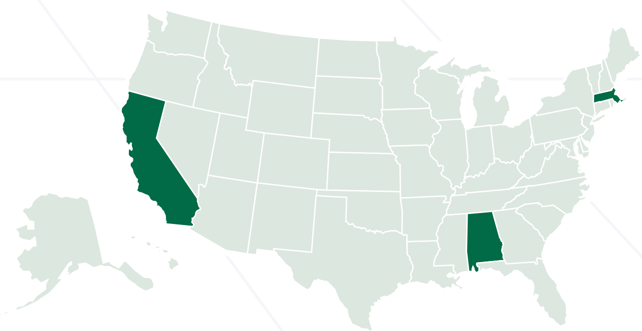
- **3QFY93** Completed Block I.
- **4QFY95** Completed Block II; Awarded Block III contract.
- **3QFY99** Completed Version 5.1 software system certification test (SCT).
- **4QFY00** Completed fieldings for 10 divisions, an armored cavalry regiment, a National Guard corps Avenger battalion, and a training base set; Completed Version 5.2 software integration, assembly and test.
- **2QFY01** Commenced Force XXI Battle Command Brigade-and-Below (FBCB2) limited user test (LUT); Participated in FDD Division Capstone Exercise (DCX)-1 at NTC, Ft. Irwin, CA; Materiel release of FAAD C2 Version 5.1 software.
- **3QFY01** Completed Version 5.2 software SCT.
- **1QFY02** Participated in DCX2 at Ft. Hood.

Projected Activities

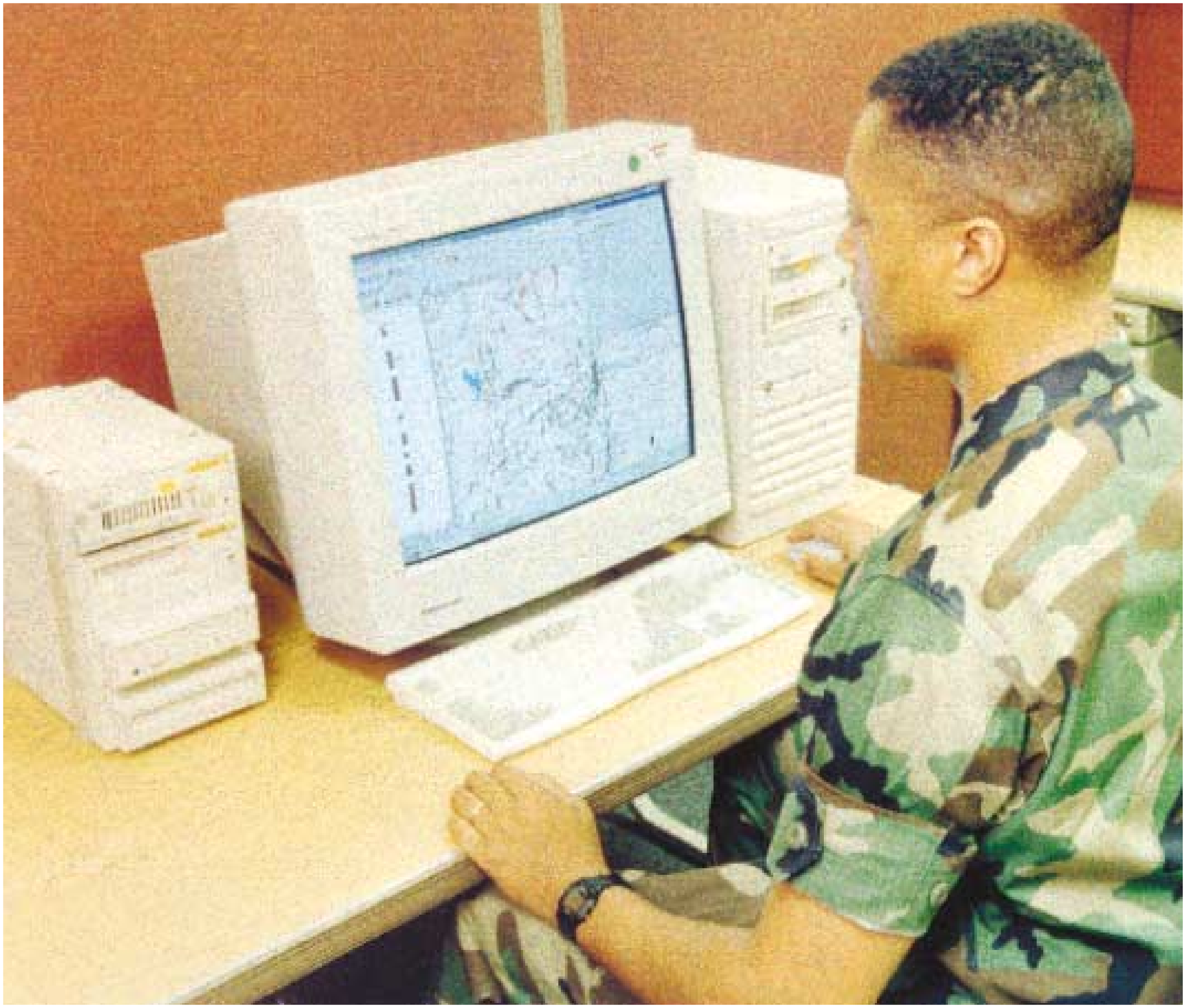
- **2QFY02** Commence Version 5.2 software LUT.
- **1QFY03** Material Release Version 5.2.
- **4QFY03** Initial Version 5.3 delivery with Beyond Visual Range Engagement (BVRE).

Prime Contractors

TRW (Redondo Beach, CA)



See appendix for list of subcontractors



Global Command and Control System–Army (GCCS–A)

Mission

Provide automated command and control (C2) tools for Army strategic and theater commanders to enhance warfighter capabilities throughout the spectrum of conflict, during joint and combined operations, in support of the National Command Authority.

Description and Specifications

The Global Command and Control System-Army (GCCS-A) is the Army's strategic and theater C2 system. It provides readiness, planning, mobilization, and deployment capability information for strategic commanders. For theater commanders, GCCS-A provides the following:

- Common operational picture and associated friendly and enemy status information
- Force-employment planning and execution tools (receipt of forces, intra-theater planning, readiness, force tracking, onward movement and execution status)
- Overall interoperability with joint, coalition, and the tactical Army Battle Command Systems (ABCS).

The GCCS-A supports Army units from the National Command Authority, commanders-in-chief in the theater, and down through the joint task force commander. As part of ABCS, GCCS-A provides a seamless Army extension from the strategic GCCS system to echelons corps and below. Compatibility and interoperability are achieved by building the GCCS-A applications to operate on the Defense Information Infrastructure/Common Operating Environment (DII COE), and through interfaces to other C2 systems within the Army as well as to other services.

DII COE specifies a common system infrastructure for all C2 systems in accordance with the joint technical architecture guidelines. This approach provides common support architecture, with modular software for use by the services/agencies in developing mission specific solutions to their C2 requirements. The system's hardware platform is based on commercial off-the-shelf hardware and the products in the Common Hardware Software II contract. The system architecture links users via local area networks in client/server configurations with an interface to the Secret Internet Protocol Router Network (SIPRNET) for worldwide communication.

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

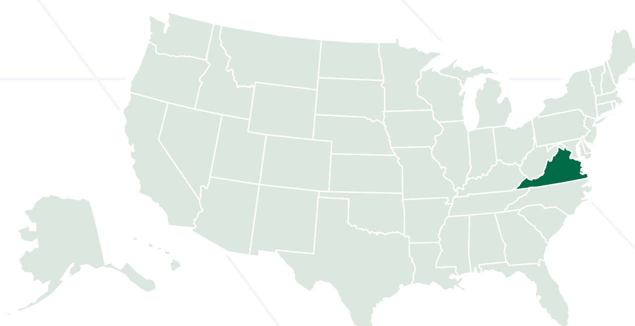
- Fielded GCCS-A to U.S. Army Forces Command; U.S. Army, Europe; U.S. Army, Pacific; U.S. Southern Command; Headquarters, Department of the Army; U.S. Army Central Command; and the Combined Forces Command, Korea, III Corps, XVIII Corps, I Corps, V Corps.
- GCCS-A fully involved in the Army's digitization efforts.

Projected Activities

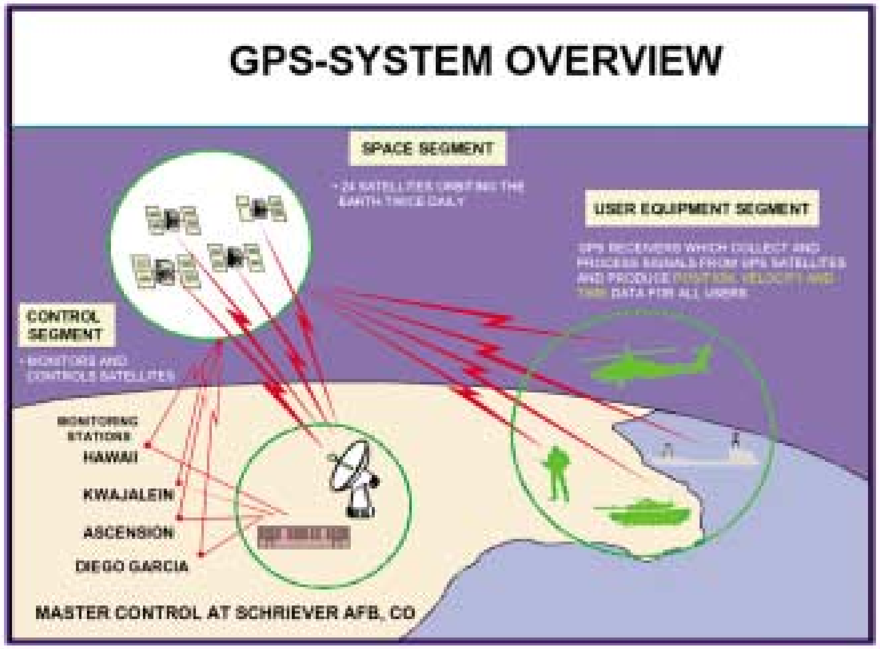
- Complete development and initial fielding of a common theater baseline.
- Modify strategic and theater architectures to support joint GCCS updates.
- Continue the spiral development process in support of Army digitization and program requirements.

Prime Contractors

Lockheed Martin (Springfield, VA)



See appendix for list of subcontractors



User Equipment Segment

Global Positioning System (GPS)

Mission

Provide accurate, continuous, all-weather, common-grid, worldwide navigation, positioning, velocity and timing (PVT) data to land, sea, air, and space-based users.

Description and Specifications

The Global Positioning System (GPS) is a joint service program, led by the Air Force. GPS is a space-based navigation system that distributes PVT data. It has three segments: a space segment (nominally 24 satellites), a ground control segment, and a user equipment segment. User equipment consists of receivers configured for handheld use, ground, aircraft and watercraft applications. Military GPS receivers use the Precise Positioning Service (PPS) signal to gain enhanced accuracy and signal protection not available to commercial equipment using the Standard Positioning Service (SPS) signal. The primary GPS receiver in the Army today is the Precision Lightweight GPS Receiver (PLGR) with more than 83,000 in hand-held, installed and integrated applications. The Army represents more than 80 percent of the Department of Defense requirement for user equipment.

Foreign Counterpart

Russia: GLONASS; Europe: GALILEO (still in planning stage)

Foreign Military Sales

A variety of PPS-capable GPS receivers have been sold to 28 authorized countries.

Program Status

- **PLGR:** A supplemental purchase of approximately 13,500 PLGRs was completed to provide assets necessary for Army Digitization and Transformation programs.
- **Standalone Air GPS Receiver (SAGR):** The SAGR remains in use with selected non-modernized Army aircraft.
- **Cargo Utility GPS Receiver (CUGR):** 371 of 783 planned UH-1 installations were completed. No additional installs planned due to accelerated retirement of UH-1 aircraft.

Projected Activities

Fielding

- Supplemental PLGR fielding continues through FY04 to support Army Transformation.
- CUGR is being installed to OH-58 and selected other aircraft to utilize available assets.

Modernization

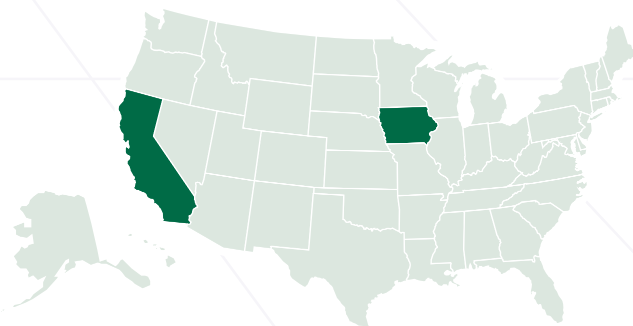
- The program research development announcement (PRDA) contract to develop the next-generation hand-held receiver called Defense Advanced GPS Receiver (DAGR) was extended with production contract scheduled for 1QFY03 and fielding in FY04.
- The PRDA contract to develop the next-generation embeddable GPS receiver called the Ground Based GPS Receiver Applications Module (GB-GRAM) was extended with delivery of production prototypes scheduled for FY02 and production in FY03.
- The Navigation Warfare (NAVWAR) initiative to address GPS vulnerabilities through the use of new protection and denial technologies and new military satellite signals continues. NAVWAR is an element of the larger Modernization program.

Horizontal Technology Insertion (HTI)

- DAGR is now designated an HTI initiative. DAGR will replace most PLGR.
- The GB GRAM will be submitted for HTI designation. Together, DAGR and GB GRAM will introduce next-generation GPS technology to a broad range of host platforms and weapons systems during the FY03-11 timeframe.
- The GPS tactical receiver operational requirements document projects the total number of receivers required during this timeframe to exceed 650,000.

Prime Contractors

Rockwell Collins (Cedar Rapids, IA); Trimble Navigation (Sunnyvale, CA)



See appendix for list of subcontractors

Ground-Based Midcourse Segment (GBMS) of Missile Defense

Ground-Based Midcourse Segment (GBMS) of Missile Defense

Mission
Defend the United States against limited strategic ballistic missile threats.

Description and Specifications
The initial segment of the nation's Ballistic Missile Defense System (BMDS) is the Ground-Based Midcourse Defense (GMD) system. GMD is a fixed-site, land-based system. It will operate in conjunction with the Integrated Tactical Warning and Attack Assessment (ITW/AA) system, and ground and space-based early warning (EW) systems. It will acquire, track, discriminate, destroy, and provide kill assessment of strategic ballistic missiles. The Army elements of the GMD system include the following:

- Ground-based, exo-atmospheric, hit-to-kill interceptors
- Ground-based, phased-array, X-band defense radar (XBR) (for surveillance, tracking, object classification, and kill assessment)
- Site battle management command, control and communication (BMC3) for human-in-control, engagement planning, top-level decision-making, and system communications.

A GMD engagement is initiated based on the detection and designation of a hostile ballistic missile launched toward the United States. BMC3 aids the operators in identifying the re-entry vehicles and planning the engagement, using data from surveillance and tracking systems, including the ground-based radar. After launch and burnout of the ground-based interceptor (GBI) booster, an exo-atmospheric kill vehicle (EKV) separates and repositions itself, pointing the seeker field-of-view to the predicted target position. The onboard computer receives additional target updates from the BMC3 based on surveillance data and executes intercept course correction maneuvers. Once uncapped, the on-board passive seeker searches and acquires the target and any associated objects in its field of view. The target is designated, using on-board target selection capabilities. The kill vehicle then tracks the target, executing "end-game" maneuvers to achieve a direct-impact kill. The intercept is monitored by the X-band radar and EW sensors for kill assessment or further battle management action.

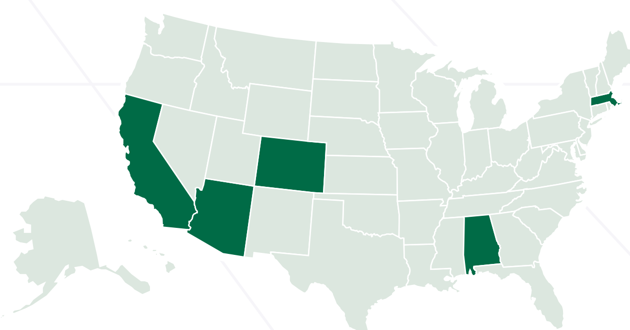
Foreign Counterpart
Russia: Moscow ABM System

Foreign Military Sales
None

Program Status
- **3QFY97-2QFY98** Conducted two successful flight tests of EKV sensors from the U.S. Army Kwajalein Atoll (USAKA).
- **3QFY98** Awarded lead system integration contract.
- **4QFY98** Selected commercial off-the-shelf booster approach for GBI.
- **1QFY99** Selected primary EKV contractor.
- **1QFY00** Conducted successful integrated flight test (IFT) of EKV, launched from USAKA, resulting in intercept of a medium re-entry vehicle launched from Vandenberg Air Force Base, CA. Successfully operated prototype Ground-Based Radar (GBR) and portions of BMC3 in "shadow mode" during testing.
- **2QFY00** Conducted second EKV intercept attempt (IFT 4).
- **4QFY00** Conducted integrated system test (IFT 5); Completed deployment readiness review; President's decision: defer deployment, continue research, development, test, and evaluation.
- **4QFY01** Integrated flight test (IFT 6). Conducted successful integrated flight test (IFT) resulting in direct hit-to-kill intercept of a simulated threat re-entry vehicle.
- **1QFY02** Integrated flight-test 7 (IFT 7) successfully completed.

Projected Activities
- **2QFY02** IFT 8.
- One IFT planned per quarter.

Prime Contractors
Boeing (Huntsville, AL)



See appendix for list of subcontractors

Guardrail/Common Sensor (GR/CS)

Guardrail/Common Sensor (GR/CS)

Mission
Provide signal intercept and precision target location of threat communications and non-communications electronic emitters.

Description and Specifications
The Guardrail/Common Sensor (GR/CS) is a corps-level, fixed-wing, airborne signals intelligence (SIGINT) collection and target location system. The GR/CS system supports corps, division, and joint land force component commanders by detecting, identifying, exploiting, and precisely locating threat communications, radars and other electronic emitters throughout the corps area of interest. It provides information dominance to the tactical commander.

One GR/CS system is authorized per aerial exploitation battalion in the military intelligence brigade at each corps. A standard system consists of 6-12 RC-12 aircraft that fly operational missions in sets of two or three. Ground processing is conducted in the integrated processing facility (IPF). Interoperable data links provide microwave connectivity between the aircraft and the IPF. GR/CS systems provide near real-time SIGINT and targeting information to tactical commanders throughout the corps area via the Joint Tactical Terminal. Key features include:

- Integrated communications intelligence (COMINT) and electronic intelligence (ELINT) collection and reporting
- Enhanced signal classification and recognition
- Near-real-time direction finding
- Precision emitter location
- Advanced integrated aircraft cockpit.

Planned product improvements include greater mobility and deployability via smaller "mini-" IPFs and system upgrades to increase GR/CS capability to exploit a wider range of signals. The GR/CS shares technology with the airborne reconnaissance low and other joint systems.

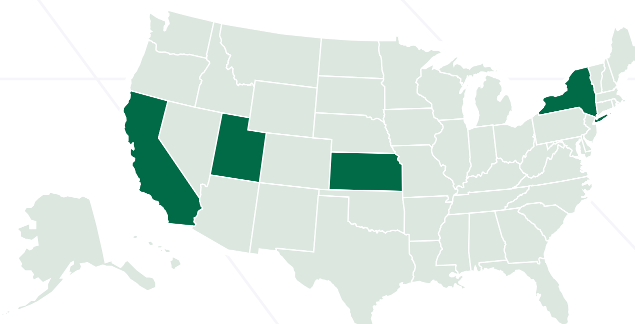
Foreign Counterpart
Numerous countries possess airborne electronic warfare systems, but none achieves the direction-finding accuracy of the Guardrail system.

Foreign Military Sales
None

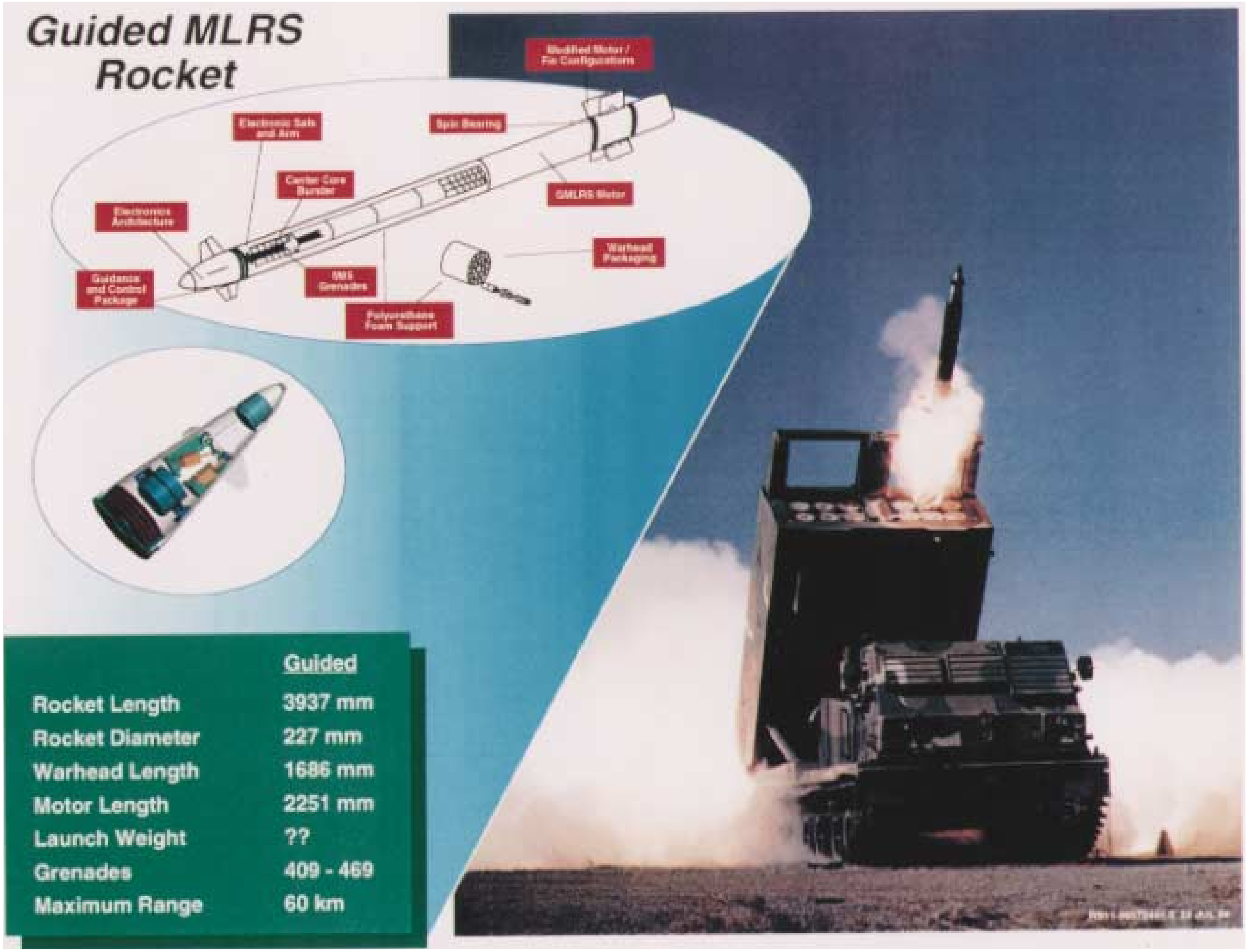
Program Status
- Fielded reporting shelter #1 to GR/CS System 4 at the 1st MI BN.
- Conducted accreditation testing on reporting shelter #1 at 1st MI BN.
- Handed off reporting shelter #1 to First Military Intelligence Battalion (1st MI BN) GR/CS System 4.
- Developed an interim tactical information broadcast service (TIBS) capability for all GR/CS Systems.
- Provided an interim TIBS capability for GR/CS Systems 2 and 4.
- GR/CS System 2 conditionally released to 15th MI BN.
- **1QFY02** Initiated final TIBS solution for all GR/CS Systems.
- **1QFY02** Fielded reporting shelter #2 and interim TIBS capability to GR/CS System 3 at 3rd MI BN.
- **1QFY02** Provided interim TIBS capability to GR/CS System 2 at 15th MI BN.
- **1QFY02** Conducted reaccreditation testing on GR/CS System 3 Reporting shelter for 3rd MI BN.

Projected Activities
- **2-3QFY02** Field reporting shelter #3 and conduct accreditation testing on GR/CS System 1 at 224th MI BN.
- **2QFY02** Initiate contract for additional GR/CS System 3 ICS/RRS to round out aircraft fleet.
- **3-4QFY02** Provide final TIBS capability to all GR/CS systems.
- **4QFY02** Obtain full materiel release for GR/CS System 2.

Prime Contractors
Raytheon (Wichita, KS); TRW (Sunnyvale, CA); L-3 Communications (Salt Lake City, UT); Lockheed Martin (Owego, NY)



See appendix for list of subcontractors


Guided MLRS Rocket
Modified Motor / Fin Configurations
Electronic Safe and Arm
Spin Bearing
Center Core Burster
GMLRS Motor
Electronics Architecture
Warhead Packaging
Guidance and Control Package
Grenades
Polyurethane Foam Support
Guided
Rocket Length 3937 mm
Rocket Diameter 227 mm
Warhead Length 1686 mm
Motor Length 2251 mm
Launch Weight ??
Grenades 409 - 469
Maximum Range 60 km

Guided Multiple Launch Rocket System (GMLRS)

Mission

Provide longer-range, precision Multiple Launch Rocket System (MLRS) fires while reducing hazards to friendly maneuver.

Description and Specifications

The Guided Multiple Launch Rocket System (GMLRS) supports the Army Transformation with increased overmatch capabilities and reduced logistics footprint over current freeflight rockets. GMLRS will be employed with the M270A1 upgrade and the HIMARS launchers. GMLRS is a multinational development program that upgrades the Extended Range Multiple Launch Rocket System (ER-MLRS).

The GMLRS will incorporate various components from the ER-MLRS, such as grenades and rocket pod, but will transform the MLRS freeflight rocket into a precision-guided rocket by integrating a guidance and control package and a new rocket motor to achieve greater range and accuracy. A low-cost, tactical-grade, inertial measurement unit (IMU), which will be aided by a Global Positioning System (GPS) receiver, will guide the GMLRS. GPS is not mission-essential, but will increase accuracy when used in conjunction with the IMU. GMLRS provides the necessary components (guidance, controls, and motor) for further precision and smart submunition variants.

Warhead: Dual purpose improved conventional munition (DPICM)

Propulsion: Solid

Guidance: GPS-aided IMU

Control: 4-axis Canard

Foreign Counterpart

The Israeli Ministry of Defense is developing a ground-commanded, trajectory-correcting MLRS variant.

Foreign Military Sales

None

Program Status

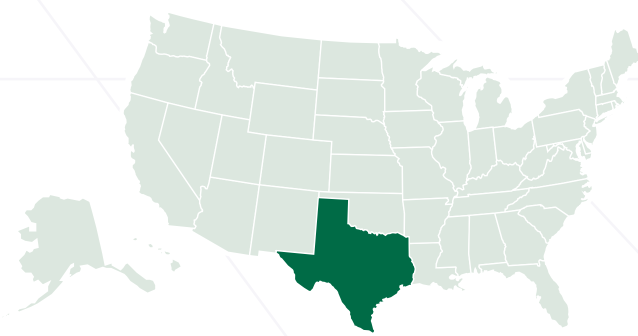
- **1994** Commenced the advanced technology demonstration (ATD) phase, which is managed by the U.S. Army Aviation and Missile Command's Missile Research, Development, and Engineering Center.
- **3QFY98-2QFY99** Conducted five ATD flight tests.
- **4QFY98** Completed development phase international memorandum of understanding with France, Germany, Italy, and the United Kingdom.
- **1QFY99** Transitioned GMLRS program to the engineering and manufacturing development (EMD) phase, which is managed by the Project Manager MLRS as an international cooperative development program.
- **4QFY99** Successfully completed the EMD preliminary design review.
- **4QFY00** Demonstrated DPICM dispense threshold; Completed rocket motor pre-flight readiness tests.
- **1QFY01** Restructured program with new guidance set; Successfully completed the first ballistic flight test.

Projected Activities

- **3QFY02** EMD critical design review.
- **1QFY03** Production qualification test flight readiness.
- **2QFY03** Product definition data package completion.
- **3QFY03** Low-rate initial production decision.
- **3QFY05** Initial operational test.
- **2QFY06** Milestone III decision; Initial operational capability.

Prime Contractors

Lockheed Martin (Dallas, TX)



See appendix for list of subcontractors

High Mobility Artillery Rocket System (HIMARS)

High Mobility Artillery Rocket System (HIMARS)

Mission
Provide light, airborne, and air assault divisions and early-entry/contingency forces with Multiple Launch Rocket System (MLRS) firepower capability to conduct counterfire, suppression of enemy air defenses, and precision indirect fires to destroy materiel and personnel targets.

Description and Specifications
The High Mobility Artillery Rocket System (HIMARS) supports the Army Transformation with a rapidly deployable, lethal fire-support system for early entry/contingency forces. HIMARS is mounted on a Family of Medium Tactical Vehicles (FMTV) five-ton truck and can be transported by C-130 or larger aircraft. The wheeled chassis allows for faster road movement, lower operating costs, and requires 30 percent fewer strategic airlifts (via C-5 or C-17) to transport a battery than the current tracked M270 MLRS launcher unit. The HIMARS can fire the suite of MLRS family of munitions, including all Army tactical missile system variants. The HIMARS carries either a rocket or a missile pod, has a self-loading capability, and is manned by a three-man crew.

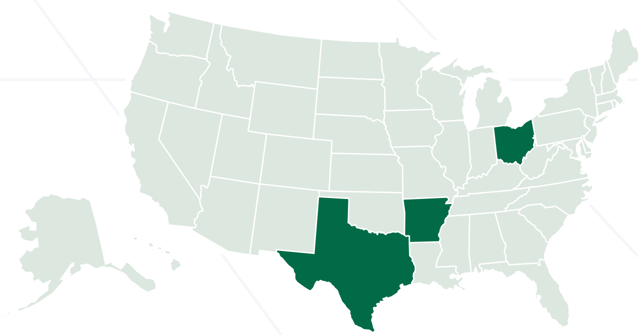
Foreign Counterpart
There are several foreign, wheeled, multiple-rocket-launch systems on the international market; none, however, has the mobility and munitions suite capabilities of HIMARS.

Foreign Military Sales
None

Program Status
- In FY00, Congress provided additional funding to accelerate HIMARS development. Additional procurement funding is programmed in FY03 and FY04 to accelerate HIMARS procurement in order to field two HIMARS Battalions in FY05.
- Four HIMARS prototypes were built as part of the Rapid Force Projection Initiative (RFPI) advanced concept technology demonstration (ACTD). Three of the prototype HIMARS remained with the XVIII Airborne Corps for training and further evaluation during the highly successful RFPI ACTD's two-year extended user evaluation that ended 4QFY00. Due to the fine performance of the system in the ACTD and the limited “go-to-war capability” that it provides the force, the Army has decided to retain these prototypes in the unit until formal fielding.
- The HIMARS prototypes have received both a live-fire safety release and C-130 air certification. Lessons learned in the RFPI ACTD's field experiment and early-user experiment are being used in the re-design of the HIMARS during the engineering and manufacturing development (EMD) program.
- HIMARS EMD phase began 1QFY00.

Projected Activities
- **FY02-05** Conduct developmental testing/operational testing.
- **2QFY03** Low rate initial production decision.
- **2QFY05** Battalion-level first unit equipped.

Prime Contractors
Lockheed Martin (Dallas, TX; Camden, AR)

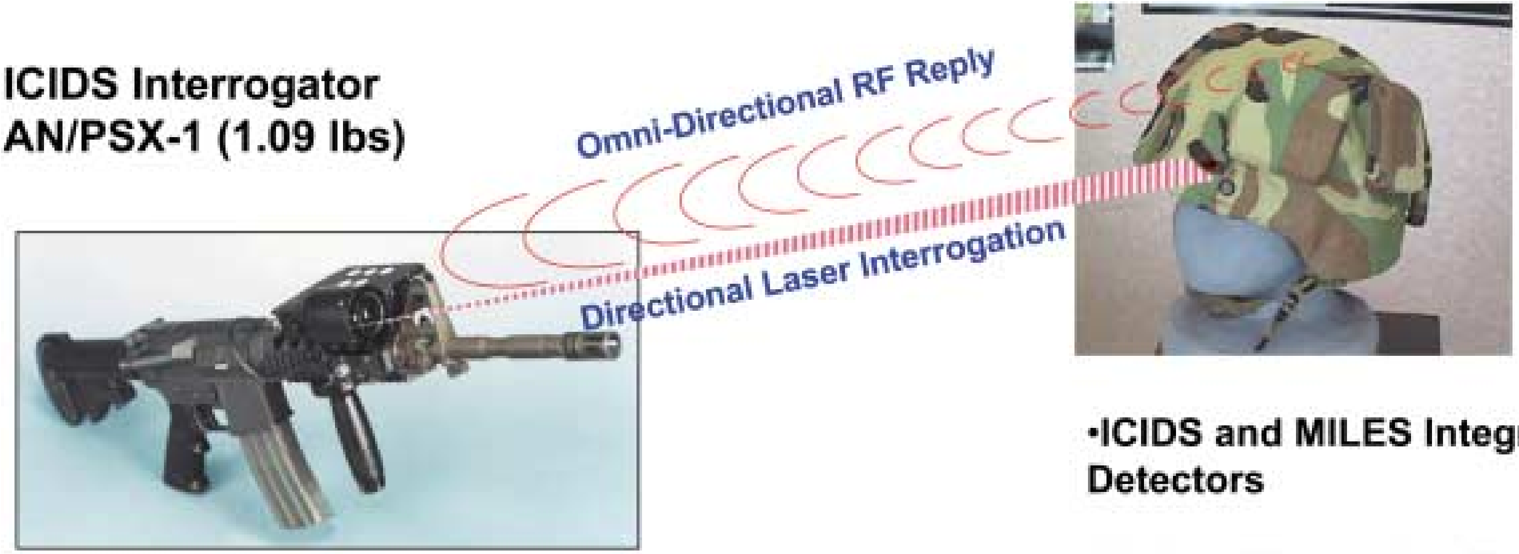


See appendix for list of subcontractors

Individual Combat Identification System (ICIDS)

ICIDS Transponder
AN/PSC-12 (0.74 lbs)

ICIDS Interrogator
AN/PSX-1 (1.09 lbs)



- Combat Identification
- Integrated IR Aiming Pointer
- Integrated IR Illumination
- Integrated MILES Laser

- ICIDS and MILES Integrated Detectors
- Helmet Electronics (Processor board, RF/IR Board)
- Multiple Conformal Antennas for RF Response

Individual Combat Identification System (ICIDS)

Mission

Provide the materiel solution for minimizing battlefield fratricide incidents among individual soldiers.

Description and Specifications

The Individual Combat Identification System (ICIDS) (formerly known as Combat Identification for the Dismounted Soldier [CIDDS]) is a lightweight, laser-interrogate, radio frequency (RF) reply, question-and-answer combat identification system that enables individual soldiers to positively identify each other on the modern battlefield. The ICIDS also provides an infrared aiming light, infrared illuminator and embedded multiple integrated laser engagement system (MILES) capability. A horizontal technology integration (HTI) program, ICIDS is designed to be used on a variety of small arms and machine guns. ICIDS's operating range is a minimum of 1100 meters under clear weather conditions, and exceeds the soldier's target acquisition capability under degraded atmospheric conditions. ICIDS fulfills requirements for use by Army, Marine and Special Operations forces.

Two versions of ICIDS are being developed: stand-alone and Land Warrior (LW). The stand-alone version includes a weapon-mounted interrogator and a helmet-mounted transponder. The weapon-mounted interrogator integrates into a single module the following features: an eyesafe combat identification laser for interrogating individual soldiers; a near-infrared laser pointer for aiming the soldier's weapon at night with night vision goggles; an embedded MILES training capability that is interoperable with MILES/MILES 2000; and an additional laser cavity for future growth. The helmet-mounted transponder consists of ICIDS and MILES-integrated laser detectors for detecting ICIDS interrogations and MILES events, an electronics unit for processing interrogations and generating the replies, and conformal antennas for transmitting the RF friendly replies back to the shooter.

The LW version is being developed by the Soldier and Biological Chemical Command (SBCCOM), PM Soldier. The LW version will be an embedded version to minimize weight and power impacts on the soldier.

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

- Successfully completed System Development and Demonstration (SDD) phase.
- Successfully achieved Milestone C approval to enter low rate initial production (LRIP) phase.
- **September 20, 2001** Awarded LRIP Contract for 100 systems for initial operational test and evaluation (IOT&E) and to validate the technology.

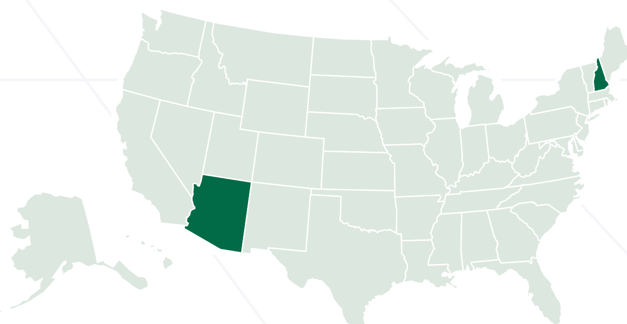
Projected Activities

- **FY02** Continue LRIP; Purchase 348 systems.
- **FY03** Program funding for FY03-07 deleted due to reprioritization of Army programs.

Prime Contractors

General Dynamics (formerly Motorola), (Scottsdale, AZ)

Insight Technology, Inc. (Manchester, NH)



See appendix for list of subcontractors

Integrated Meteorological System (IMETS)

Integrated Meteorological System (IMETS)

Mission

Provide commanders at all echelons with an automated tactical weather system that receives, processes, and disseminates weather observations, forecasts, battlefield visualization and weather-effects-decision aids to all Army tactical command and control system (ATCCS) battlefield functional areas (BFAs).

Description and Specifications

The Integrated Meteorological System (IMETS) is the weather component of the intelligence electronic warfare (IEW) sub-element of the Army Battle Command System (ABCS). IMETS is an Army furnished system that is operated by Air Force weather personnel and maintained within Army support channels. IMETS consists of three configurations: vehicle mounted configuration (VMC), light configuration (LC) and command post configuration (CPC). It provides automation and communications support to Air Force combat weather teams assigned to the Army at echelons-above-corps down to aviation battalions and to Army Special Operations forces.

IMETS processes and collates forecasts, observations, and climatological data to produce timely and accurate weather products (forecasts, severe weather warnings for aviation, downwind forecasts/predictions for nuclear, biological and chemical (NBC) effects, satellite imagery, weather annexes) tailored to the specific warfighter's needs. The most significant weather and environmental support tools available to warfighters are the automated tactical decision aids, which display the impact of the weather on current or planned operations for both friendly and enemy forces. This enables the warfighter to more effectively employ his forces and weapons systems to achieve success in battle.

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

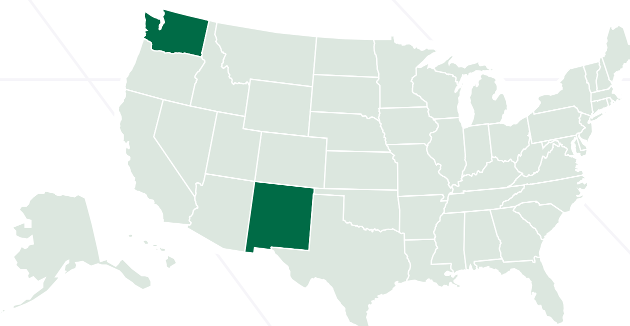
- **FY01** Fielded 30 Block II VMCs.
- Redirected IMETS in response to the operational requirements document (ORD) and realigned it with the Air Force reengineering initiative. The ORD now requires three separate configurations of IMETS—HMMWV-mounted, command post, and light-tailored to different tactical echelons.
- Continued development of light version of the weather effects workstation.

Projected Activities

- **FY02** Conduct testing, materiel release and fielding of initial (17) LCs (Includes I-BCT); Field 1 VMC.
- **FY03** Field 32 LCs (Include I-BCT); Develop and test 3 CPCs.

Prime Contractors

Northrop Grumman (Lakewood, WA); New Mexico State University (Las Cruces, NM)



See appendix for list of subcontractors

Integrated System Control (ISYSCON) V(1)/V(2)

Mission

Provide an automated, theater-wide system that signal units can use to manage multiple tactical communications systems and networks in support of battlefield operations.

Description and Specifications

The Integrated System Control (ISYSCON) facility is a centralized network management solution that satisfies shortfalls identified in this area during Operation Desert Storm and other recent deployments. The ISYSCON facility will:

- Provide an automated capability for managing the tactical communications network.
- Establish an interface with each technical control facility in the Army Battle Command System (ABCS) architecture.
- Enable automation-assisted configuration and management of a dynamic battlefield.

The ISYSCON V(1)/V(2)/V(3) program supports the Area Common User System Modernization Program (ACUS MOD) and the Army Battle Command System (ABCS) as an integral part of the Army Vision 2010 for Information Dominance on the battlefield. The ISYSCON V(1)/V(2)/V(3) will provide the Signal Command and staff with a centralized planning and control capability to manage tactical communication networks in support of combat forces, weapons systems and battlefield automated systems.

The ISYSCON V(1)/V(2)/V(3) will function as the battlefield communications infrastructure management system at division through theater and in support of independent task force operations. The ISYSCON V(1)/V(2)/V(3) program serves as the baseline foundation to support the future network management initiatives tied to the digitized Army and Warfighter Information Network–Tactical (WIN-T) architecture. An ISYSCON V(1)/V(2) node consists of a Standardized Integrated Command Post System (SICPS) shelter on a High Mobility Multipurpose Wheeled Vehicle (HMMWV) and two SICPS extension tents, two servers, four client workstations and peripherals. The ISYSCON V(3) is a lightweight configuration designed to support forward-entry and split-base operations. The ISYSCON V(3) will consist of three operational transit cases that house a lightweight computer unit, router, printer and uninterruptable power supply.

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

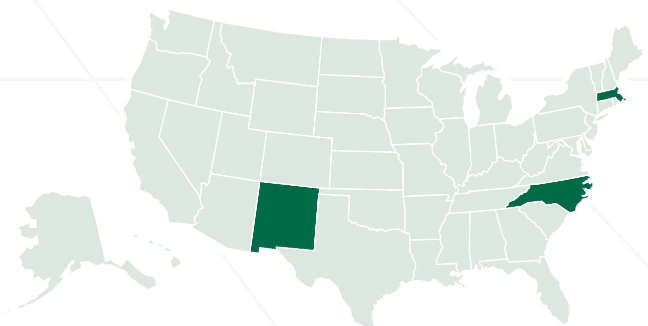
- Milestone III decision approved.
- **1QFY01** Material release/fielding.
- **2QFY02** Updated Operational Requirements Document scheduled for AROC.

Projected Activities

- Continue Fieldings.
- Developing ACUS Network Management tool for EAC.

Prime Contractors

General Dynamics (Taunton, MA; Needham, MA); Laguna Industries (Laguna, NM)



See appendix for list of subcontractors

Interim Armored Vehicle (IAV)

Interim Armored Vehicle (IAV)

Mission

Serve as the primary combat and combat support platform of the Interim Brigade Combat Teams (IBCTs) and fulfill the immediate requirement for a strategically deployable (C-17/C-5) and intra-theater deployable (C-130) brigade capable of rapid movement anywhere on the globe in a combat ready configuration; support the Army Vision and Transformation with equipment that is highly deployable, lethal, survivable, mobile and reliable.

Description and Specifications

The Interim Armored Vehicle (IAV) is the primary combat and combat support platform of the IBCT. The IBCT is a full-spectrum combat force. The IAV-equipped IBCT is optimized for small scale contingencies (SSCs) and will also support major theater wars (MTW) with augmentation. The IBCT's effectiveness was confirmed through extensive analysis in all operational environments and against all current and projected threats.

The IAV family of vehicles consists of two variants: the infantry carrier vehicle (ICV) and the mobile gun system (MGS). The ICV is a troop transport vehicle capable of carrying nine infantry soldiers, their equipment and a crew of two consisting of a driver and vehicle commander. The MGS is designed to support infantry. It incorporates a 105mm turreted gun and autoloader system designed to defeat bunkers and breach double-reinforced concrete walls. There are eight other configurations based on the ICV that provide combat and combat support capabilities. These are the reconnaissance vehicle (RV), mortar carrier (MC), commander's vehicle (CV), fire support vehicle (FSV), engineer squad vehicle (ESV), medical evacuation vehicle (MEV), anti-tank guided missile vehicle (ATGM), and nuclear, biological and chemical reconnaissance vehicle (NBCRV).

The IAV is an eight-wheeled vehicle powered by a 350hp diesel engine. It incorporates a central tire inflation system, run-flat tires, and a vehicle height management system. The IAV family (less the MEV) is armed with a remote weapons station that supports an M2 .50 caliber machinegun or MK19 automatic grenade launcher, the M6 countermeasure device (smoke grenade launcher) and an integrated thermal weapons sight. The IAV is capable of supporting a communications suite that integrates the Single Channel Ground and Airborne Radio system (SINCGARS) radio family; Enhanced Position Location Reporting System; Force XXI Battle Command Brigade-and-Below; Global Positioning System; and high frequency and near-term digital radio systems. The IAV provides up to 14.5mm ballistic protection.

The IAV is deployable by C-130 aircraft and is combat capable upon arrival in a contingency area. The IAV is capable of self-deployment by highway (no heavy equipment transports) and self-recovery (no separate recovery vehicle). It has a low noise level that reduces crew fatigue and enhances survivability. It moves about the battlefield quickly and is optimized for close, complex or urban terrain. The IAV program leverages non-developmental items with common subsystems and components to quickly acquire and field these systems. Where appropriate, IAVs will integrate existing government furnished material subsystems.

The IAV family of vehicles stresses performance and commonality that will reduce the logistics footprint and minimize sustainment costs.

Each IBCT requires 330 IAV variants. The current program acquires 2131 IAVs to field six IBCTs and TDA assets. The IAV program will equip the First IBCT at Ft. Lewis, Washington by 3QFY03.

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

2QFY03 First unit equipped.

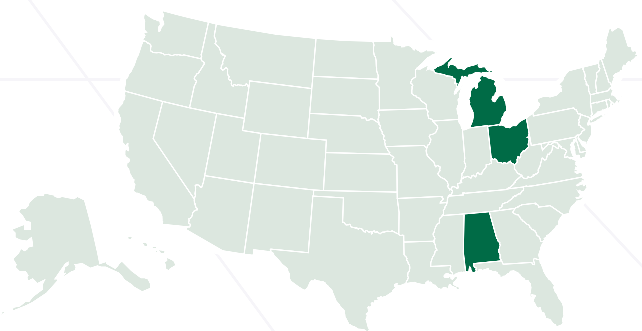
Projected Activities

1QFY04 Milestone III.

Prime Contractors

General Dynamics Land Systems (Sterling Heights, MI; Lima, OH; Anniston, AL)

General Motors Defense (London, ONT, Canada)

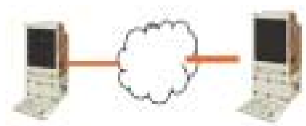


See appendix for list of subcontractors

ISYSCON (V)4/Tactical Internet Management System (TIMS)

Panasonic Toughbook CF-28

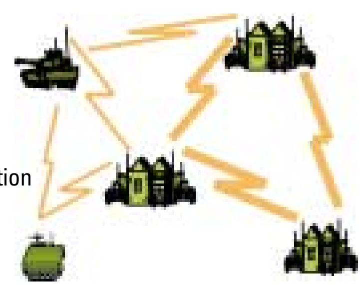
SA Status



Web technology to Disseminate Status

Local TOC Monitoring

Task Reorganization



ISYSCON (V)4/Tactical Internet Management System (TIMS)

Mission

Provide the Signal Officer, G6/S6, with a network management tool that will allow him to plan, disseminate, configure, initialize, monitor, and troubleshoot the Tactical Internet (TI) as well as the Tactical Operation Center (TOC), and Command Post (CP) Local Area Networks (LANs).

Description and Specifications

The ISYSCON (V)4/Tactical Internet Management System (TIMS) is a software system that resides on the Force XXI Battle Command, Brigade-and-Below (FBCB2) system located in the S6/G6 sections of the digitized force architecture. The ISYSCON (V)4/TIMS reuses FBCB2 software as a foundation and adds developmental and commercial, off-the-shelf (COTS) software to plan, configure, initialize and monitor the Tactical Internet. The ISYSCON (V)4/TIMS enhances the FBCB2 system management capability.

The ISYSCON (V)4/TIMS will be developed and implemented in increments by incorporating blocked enhancements to the key performance parameter threshold baseline.

The ISYSCON (V)4/TIMS is expected to evolve into new hardware and software baseline blocked enhancements. Sensitive but unclassified (SBU) LAN management capability will be added. As new systems are added to the Tactical Internet, such as aviation platforms, the ISYSCON (V)4/TIMS will provide a network management interface capability. The ISYSCON (V)4/TIMS is currently scheduled for fielding to the Interim Brigade Combat Teams and III Corps.

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

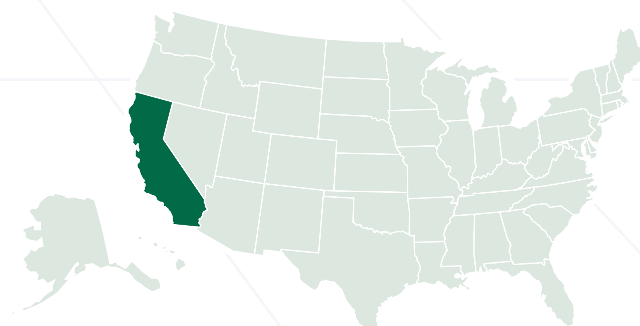
- **1QFY01** Issued to 4th Infantry Division.
- **2QFY01** 4th Infantry Division Capstone Exercise (DCX).
- **3QFY01** V2.2F Acceptance testing.
- **4QFY01** FBCB2 Field Test.
- **1QFY02** Initial operational test and evaluation.

Projected Activities

- **4QFY02** Materiel release.

Prime Contractors

TRW (Los Angeles, CA)



See appendix for list of subcontractors

Mission

Provide a man-portable, highly lethal and survivable medium anti-tank weapon system to the infantry, scouts, and combat engineers.

Description and Specifications

Javelin is the first "fire-and-forget" shoulder-fired anti-tank missile now fielded to the U.S. Army and U.S. Marine Corps, replacing Dragon. Javelin's unique top-attack flight mode, superior self-guiding tracking system and advanced warhead design allows it to defeat all known tanks out to ranges of 2500m.

Javelin's two major components are a reusable command launch unit (CLU) and a missile sealed in a disposable launch tube assembly. The CLU's integrated day/night sight provides target engagement capability in adverse weather and countermeasure environments. The CLU also may be used by itself for battlefield surveillance and reconnaissance. Javelin is fielded with no specific test measurement or diagnostic equipment—allowing our forces to deploy rapidly and unencumbered.

The Javelin missile and CLU together weigh 49.5 lbs; its maximum range is in excess of 2500m. Its fire-and-forget guidance mode enables gunners to fire and then immediately take cover, greatly increasing survivability. Special features include a selectable top-attack or direct-fire mode (for targets under cover or for use in urban terrain against bunkers and buildings), target lock-on before launch, and a very limited back-blast that enables gunners to safely fire from enclosures and covered fighting positions.

Javelin's training system consists of three devices, each with a specific role. The inert missile simulation round familiarizes gunners with the physical characteristics of Javelin; the basic skills trainer is used to develop basic tactical and technical gunnery skills; and the field tactical trainer is used to refine gunnery skills and allows participation in both range training and force-on-force exercises.

Javelin's fielding to the U.S. Army Rangers at Ft. Benning met First Unit Equipped in June 1996. Since then, Javelin has been fielded to the 82nd Airborne; 2nd ID; 1-508th IN; U.S. Army Rangers at Ft. Lewis and Ft. Stewart; the 10th Mountain Division and the first Brigade Combat Team; the 1st, 3rd, and 5th Special Forces Groups; and the 101st Airborne Division.

Foreign Counterpart

The Israeli Spike/Gill is being promoted as having fire-and-forget capability. Other medium range systems currently fielding or in development include the Russian AT-7, the Swedish Bofors Bill, the French MILAN 2T, and the Euro Missile TRIGAT.

Foreign Military Sales

More than a dozen countries have requested pricing and availability data on Javelin. A U.K. hands-on evaluation program started in April 2001.

Program Status

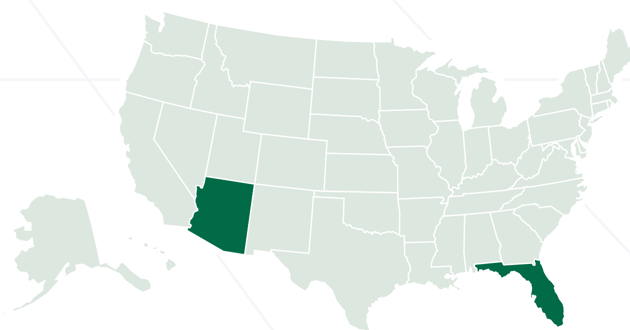
- **4QFY00** Four-year, multi-year contract awarded.
- **Current** Hardware deliveries and fielding to the Army and Marine Corps continues on schedule.
- **2QFY02** Fielded to the 172nd Infantry Brigade.

Projected Activities

- **4QFY02** Field the 1st Cavalry.

Prime Contractors

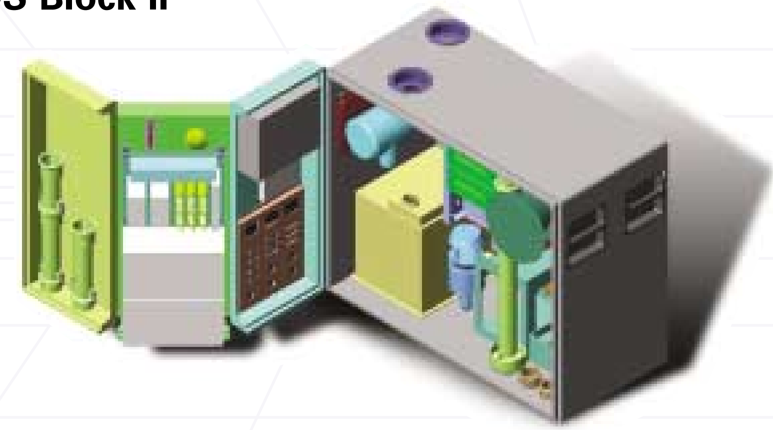
A Joint Venture between Raytheon (Tucson, AZ) and Lockheed Martin (Orlando, FL)



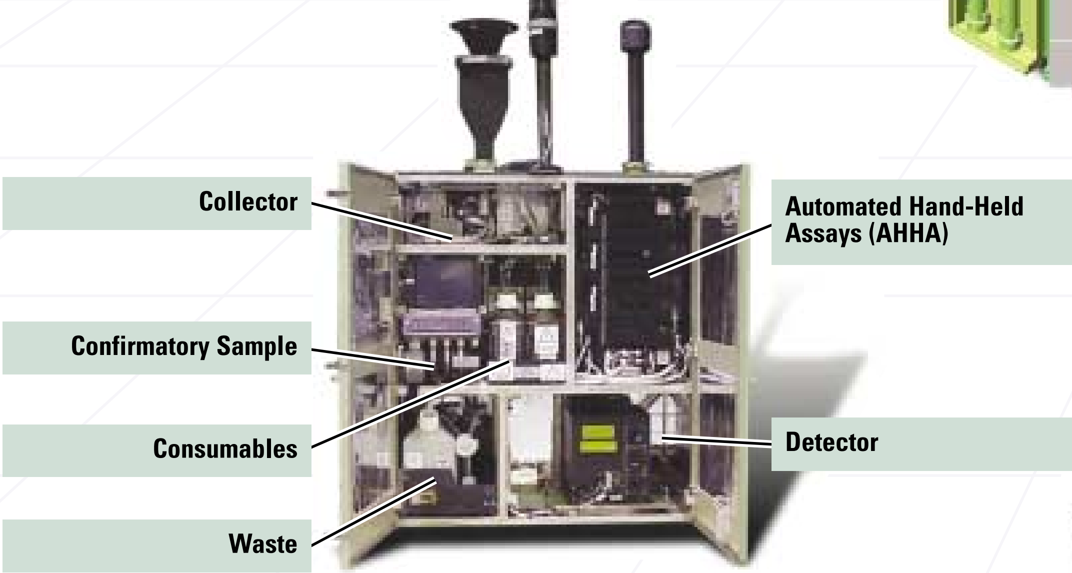
See appendix for list of subcontractors

Joint Biological Point Detection System (JBPDS)

JBPDS Block II



JBPDS Bio Suite Block I



JBPDS BIDS

Joint Biological Point Detection System (JBPDS)

Mission
Detect, identify and sample biological warfare agents automatically.

Description and Specifications
The Joint Biological Point Detection System (JBPDS) is the first joint biological warfare (BW) agent detection program. It consists of a common biosuite that can be installed on vehicles, ships, and at fixed sites to provide biological detection and warning to all service personnel. The JBPDS is also portable, and may be used in support of bare-base or semi-fixed sites. The system is fully automated and is fully Joint Technical Architecture (JTA) compliant. The JBPDS uses a spiral development and upgrade program. Block I will identify 10 BW agents simultaneously in less than 20 minutes. It will also collect a liquid sample for confirmatory analysis and identification. The Block II program will focus on reducing size, weight, and power consumption while increasing system reliability. It will also be able to identify up to 26 agents simultaneously.

The JBPDS can operate remotely up to five kilometers by either hardwire or radio modem. A single command station can operate up to 30 JBPDS systems. The JBPDS is designed to meet the broad spectrum of operational requirements encountered by the services. The JBPDS meets all environmental, vibration, and shock requirements of its intended platforms, as well as requirements for reliability, availability, and maintainability. The JBPDS includes both military and commercial global positioning, meteorological, and network modem capabilities. The system will interface with the Joint Warning and Reporting System (JWARN). The JBPDS is the first biological warfare detection system capable of meeting all operational requirements across the entire spectrum of conflict.

Foreign Counterpart
Canada: Integrated Biological Agent Detector System; United Kingdom: Integrated Biological Detection System.

Foreign Military Sales
None

Program Status
Block I:

- **FY00** Completed pre-production qualification testing, operational assessment, and field trial testing.
- **1QFY01** Awarded contract for low rate initial production (LRIP).
- **4QFY01-1QFY02** Completed Operational Assessment - 2.

Projected Activities
Block I:

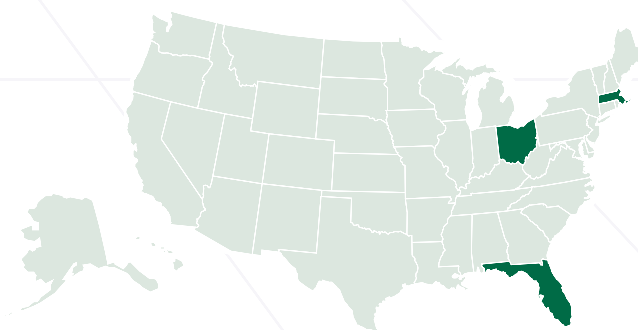
- **2QFY02** Award contract for LRIP (Phase II).
- **4QFY02** Complete initial operational test and evaluation.
- **3QFY03** Conduct Milestone III.

Block II:

- **FY02** Continue to conduct simulation and modeling of candidate systems.
- **2QFY02** Milestone I/II.

Prime Contractors
Block I: Intellitec (Deland, FL), Battelle (Columbus, OH), MIT Lincoln Laboratories (Lexington, MA)

Block II: To be determined



See appendix for list of subcontractors

Joint Chemical Agent Detector (JCAD)

Joint Chemical Agent Detector (JCAD)

Mission

Provide local detection and early warning of chemical agents, and rapid-alarm response indication to high-concentration exposure; determine decontamination requirements for vehicles, equipment, and personnel; monitor aircraft interiors and cargo during on/off load operations and monitor terrain during chemical surveys.

Description and Specifications

The Joint Chemical Agent Detector (JCAD) is a multi-mission, chemical-agent point-detection system currently in development for the U.S. military. JCAD will detect, identify, quantify, warn, and report the presence of nerve, blister, and blood agents. JCAD will also provide real-time detection and identification of toxic industrial chemicals. Equipped with a cumulative dosimeter, JCAD will be capable of accumulating and reporting miosis-level cumulative concentrations of one chemical agent, while still providing a rapid alarm response indication to a high concentration exposure from a different agent.

JCAD will store up to 72 hours of cumulative dosages and chemical alarms in its on-board memory for hazard level reporting or download. JCAD may also be used as a surface contamination survey instrument to pre-sort vehicles, equipment, and personnel to determine decontamination requirements and verify the completion of decontamination. It will also be used to monitor terrain during chemical surveys. JCAD will be mounted in cargo aircraft to monitor the cargo/cockpit areas and cargo during on/off load operations. In aircraft configurations, JCAD will alarm prior to miosis-levels to allow sufficient time for protective measures.

JCAD will be handheld or worn in a pouch that attaches to a warfighter's load-bearing equipment. The JCAD will also be installed in/on military ground vehicles, aircraft, naval ships, and military installations.

JCAD interfaces to the user with a digital/graphic liquid crystal display, and a user-selectable audio and/or LED alarm. JCAD also provides for external data interface via an RS-232 port. Its communication protocol complies with the Joint Technical Architecture and the Joint Warning and Reporting Network. The JCAD detector unit will weigh less than two pounds (0.9 kg), including the internal battery weight. The JCAD will operate on internal battery power using rechargeable or non-rechargeable cells. It will also operate under a variety of external power sources as well as in a wide range of temperatures, altitudes and environmental conditions including blowing sand and rain, freezing rain, salt fog and salt spray.

Foreign Counterpart

Counterparts are currently in development in the United Kingdom and Finland.

Foreign Military Sales

None

Program Status

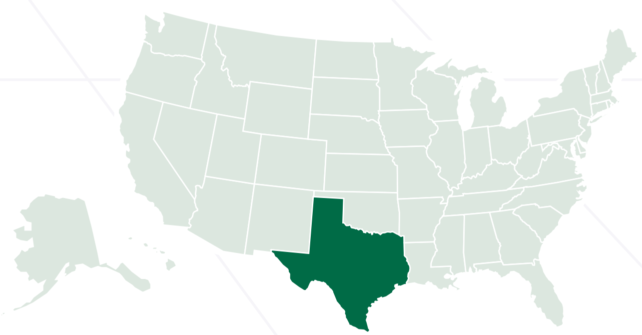
- **4QFY02** Complete contractor validation testing.
- **Current through FY03** Engineering and manufacturing development.
- **2QFY02** Critical Design Review.

Projected Activities

- Commence five-year Department of Defense procurement of more than 257,000 JCAD units. JCAD will eventually replace all current U.S. inventory chemical point-detection systems.
- **3QFY03** Milestone C/low rate initial production.
- **4QFY04** Full rate production decision.

Prime Contractors

BAE Systems (Austin, TX)



See appendix for list of subcontractors

Joint Land Attack Cruise Missile Defense (LACMD) Elevated Netted Sensors Systems (JLENS)

Mission

Provide over-the-horizon, land-attack cruise missile defense; enhance cruise missile detection; and provide extended engagement ranges to support the air-directed surface-to-air missile (ADSAM) and air-directed air-to-air missile (ADAAM) engagement concepts for current air defense weapons such as PATRIOT Advanced Capabilities (PAC-3), AEGIS/standard missile, and the advanced medium range air-to-air missile (AMRAAM).

Description and Specifications

The Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS) is an Objective Force, theater-level system that meets the requirements of the Army Transformation. JLENS is a low-cost, airborne sensor providing over-the-horizon land attack cruise missile defense. JLENS uses advanced sensor and networking technologies to provide precision tracking and 360-degree, wide-area surveillance of land attack cruise missiles. A joint program, JLENS performs as a multi-role platform to enable extended range command and control linkages, communications relay, blue force tracking and battlefield awareness. A key element of the Army Transformation single integrated air picture (SIAP), JLENS integrates data from multiple sensors and command, control, communications, and intelligence (C3I) networks and provides correlated data to ballistic missile command, control, communications, computer, and intelligence (BMC4I). JLENS provides battlefield commanders the following capabilities:

- Detection and tracking of low-altitude threats (cruise missile and aircraft) that may go undetected by surface-based sensors due to terrain masking and line-of-sight locations of targets
- Support of ADSAM and ADAAM engagements, including engage-on-remote and forward pass
- Development and display of the single integrated air picture (SIAP)
- Detection and tracking of enemy surface moving targets.

These technologies provide a low-cost, long-endurance capability to protect U.S. troops and assets in foreign lands, and provide a significant contribution to the defense of the continental U.S. and its population from cruise missile attacks. The JLENS sensor suite consists of a surveillance radar (SR) and a precision track and illumination radar (PTIR). SR provides a long-range air picture enhanced by identification friend or foe. This information, distributed via the Joint Data Network and Joint Composite Tracking Network (presently LINK 16 and cooperative engagement capability), contributes to the SIAP.

The PTIR is a steerable, lightweight array capable of tracking multiple targets in a sector. The JLENS prioritizes remote and local tracks autonomously or accepts external requests for precision tracking and engagement support.

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

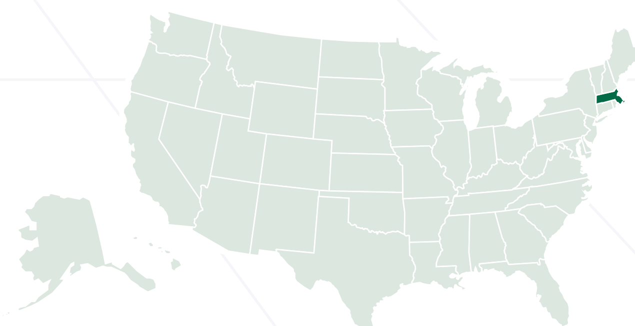
The Department of Defense and the Joint Chiefs of Staff directed the Army to lead a joint project office (Army, Navy, and Air Force). The U.S. Army Space and Missile Defense Command established the joint project office in Huntsville, AL, with Navy and Air Force deputy program managers. The JLENS Program was designated an Acquisition Category II program by the Army Acquisition Executive and is currently in the concept and technology development phase of the acquisition cycle, concentrating on prototype development and risk reduction activities. Effective 8 August 2001, JLENS transitioned to the Program Executive Office, Air and Missile Defense.

Projected Activities

- **FY01-04** Continued system design, integration, and demonstration efforts, leading to Milestone B decision.

Prime Contractors

Raytheon (Bedford, MA)



See appendix for list of subcontractors

Joint Network Management System (JNMS)

Joint Network Management System (JNMS)

Mission

Provide a common, automated joint communications planning and management system for commanders in chief, commanders of joint task forces and their supporting service component headquarters.

Description and Specifications

The Joint Network Management System (JNMS) is an automated software system that will provide communications planners with a common set of tools to conduct high-level planning, detailed planning and engineering, monitoring, control and reconfiguration, spectrum planning and management and security of systems. It will promote force-level situational awareness, provide enhanced flexibility to support the commander's intent, improve the management of scarce spectrum resources and provide increased security of critical systems and networks.

The JNMS will be developed and implemented in increments based on incorporating key performance parameter (KPP) threshold requirements, non-KPP threshold requirements and objective requirements.

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None. The objective JNMS will include a releasable version for Combined/Allied/Coalition use.

Program Status

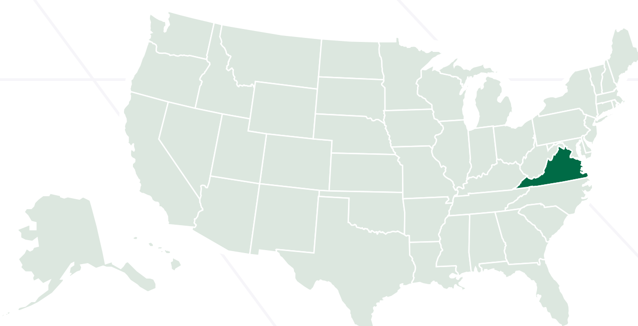
- **3QFY00** Operational Requirements Document approved (Rev 2).
- **4QFY00** Milestone I/II approval.
- **1QFY01** Solicitation issued.
- **2QFY01** Contract award.
- **4QFY01** System requirements review.
- **1QFY02** Preliminary design review.
- **1QFY02** Architecture demonstration.

Projected Activities

- **2QFY02** Critical design review.
- **3QFY02** Beta test.
- **4QFY02** Functional qualification testing.
- **2QFY03** Operational testing.

Prime Contractors

SAIC (McLean, VA)



See appendix for list of subcontractors

Joint Service Lightweight Integrated Suit Technology (JSLIST)

Joint Service Lightweight Integrated Suit Technology (JSLIST)

Mission

Provide a joint service, chemical/biological (CB), protective clothing ensemble that can be tailored to the diverse operational needs of the individual soldier—marine, airman, and sailor—and is compatible with existing and emerging individual protective equipment.

Description and Specifications

The Joint Service Lightweight Integrated Suit Technology (JSLIST) system will consist of three components: lightweight CB protective garments, multi-purpose overboots and gloves. Each component is based on state-of-the-art material technologies that have undergone extensive user evaluation and field and laboratory testing. This system provides the highest level of protection against current CB threats, while reducing heat strain, weight, and bulk to an absolute minimum. Balancing CB protection and heat-strain management with service-defined mission requirements optimizes user performance.

The main thrust of the JSLIST is to develop the next-generation CB protective system. Considerable focus also continues, however, on ensuring full compatibility and integration with equipment such as developmental masks and body armor, and developmental systems such as Land Warrior, Air Warrior and Mounted Warrior. Under management of the four service program managers, JSLIST has joint participation in every aspect of the program, including management, system planning, system and component design, material selection, test execution, and data assessment. The program structure and approval processes have been configured to assure full user participation and to meet common and service-unique requirements.

Foreign Counterpart

Many countries have similar products.

Foreign Military Sales

Egypt.

Program Status

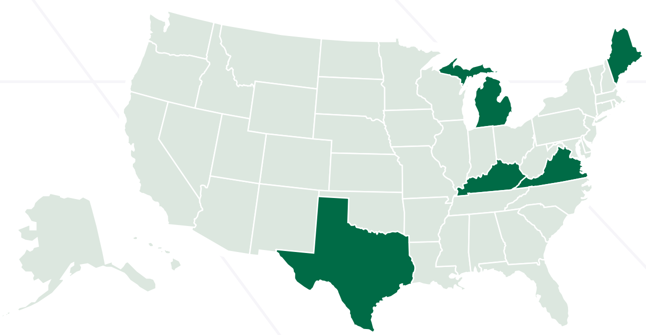
- **3QFY97** Milestone III decision.
- **4QFY97** Commenced production.
- **Current** Continuing production.

Projected Activities

- The JSLIST block upgrade program is an iterative process that will allow for periodic technology insertion of tested, approved materials into the JSLIST production cycle; the pursuit of Special Operations Command requirements; and production of improved gloves and footwear.

Prime Contractors

National Center for the Employment of the Disabled (NCED) (El Paso, TX); Group Home Foundation (Belfast, ME); Creative Apparel (Belfast, ME); South Eastern Kentucky Rehabilitation Industries (SEKRI) (Corbin, KY); Peckham Vocational Industries (Lansing, MI); Battelle (Stafford, VA)



See appendix for list of subcontractors

Joint Service Lightweight Nuclear Biological Chemical Reconnaissance System (JSLNBCRS)

Mission

Provide field unit commanders with real-time point and standoff intelligence for real-time field assessment of nuclear, biological and chemical (NBC) hazards.

Description and Specifications

The Joint Service Lightweight Nuclear Biological Chemical Reconnaissance System (JSLNBCRS) is an NBC detection and identification system. It will consist of a base vehicle equipped with hand-held, portable and mounted, current and advanced NBC detection and identification equipment (both government-furnished equipment, non-developmental item, and parallel development). The vehicle will be equipped with collective protection, an overpressure system, environmental control system, auxiliary power supply system, navigation system, meteorological data processing system, internal and external communication system and surface samplers. There will be two variants of the JSLNBCRS: the High Mobility Multipurpose Wheeled Vehicle (HMMWV) and the Light Armored Vehicle (LAV).

The JSLNBCRS will provide on-the-move reconnaissance and surveillance to support combat, combat support and combat service support forces. The JSLNBCRS will provide accurate and rapid NBC intelligence by detecting, sampling, identifying, marking and reporting the presence of NBC hazards within the unit's area of responsibility.

Foreign Counterpart

China: NBC reconnaissance vehicle; Russia: BRDM-ZRKH, MTLB, RKHM, UAZ-469RKH; Germany: ABC Reconnaissance System.

Foreign Military Sales

None

Program Status

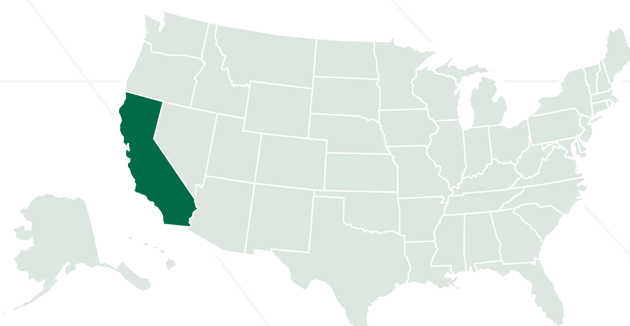
- **4QFY98** Awarded integration contract for prototype development and integration.
- **FY99** Initiated concept exploration and program definition and risk reduction phases.

Projected Activities

- **FY01-02** HMMWV/LAV variants continue engineering, manufacturing and development.
- **2Q-3QFY02** Developmental testing II/limited usability testing HMMWV.
- **1QFY03** Low rate initial production contract award HMMWV.
- **2QFY04** HMMWV/LAV initial operational test and evaluation.
- **3QFY04** Award full production contract.
- **4QFY04** HMMWV Variant initial operational capability.

Prime Contractors

TRW (Dominguez Hills, CA)



See appendix for list of subcontractors

Joint Service Lightweight Stand-off Chemical Agent Detector (JSLSCAD)

Mission
Identify chemically contaminated battlespaces and provide enhanced early warning to joint service forces.

Description and Specifications
The Joint Service Lightweight Stand-off Chemical Agent Detector (JSLSCAD) is a lightweight, passive, standoff, chemical agent detector. It will provide on-the-move detection, identification, mapping, and reporting of nerve, blister, and blood agent vapors. The JSLSCAD can communicate its warning automatically through the Joint Warning and Reporting Network (JWARN). It will provide 360° x 60° coverage, from a variety of tactical and reconnaissance platforms, at distances of up to five kilometers. When avoidance is not possible, the system will give personnel extra time to put on mission-oriented protective posture gear.

Intended applications include various ground-vehicle, aerial, shipboard, and fixed-emplacement platforms such as the following: M93A1 Fox Block II; Light NBC Reconnaissance System (JSLNBCRS); unmanned aerial vehicle (UAV); C130 aircraft; CH53 helicopter; ships; and fixed-site installations. The JSLSCAD detector and the operator display unit weigh approximately 55 lbs and the power adapter used for shipboard and fixed-site applications weighs approximately 10 lbs. The detector is approximately one cubic foot and the total of all three components is approximately one-and-a-half cubic feet.

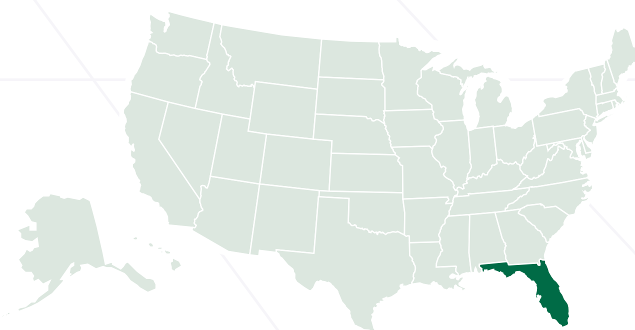
Foreign Counterpart
No known foreign counterpart

Foreign Military Sales
None

Program Status
- **2QFY98** Initiated engineering, manufacturing, and development program; Integrated product team formed to develop the test methodology for the JSLSCAD.
- **1QFY99** Completed preliminary design review.
- **3QFY99** Completed detailed design review.
- **4QFY99** Initiated fabrication of engineering design test (EDT) units.
- **1QFY00** Conducted critical design review.
- **2QFY00** Completed fabrication of EDT units; Conducted EDT.
- **1-2QFY02** Fabricated development and operational test items.
- **2QFY02** Initiated developmental tests.

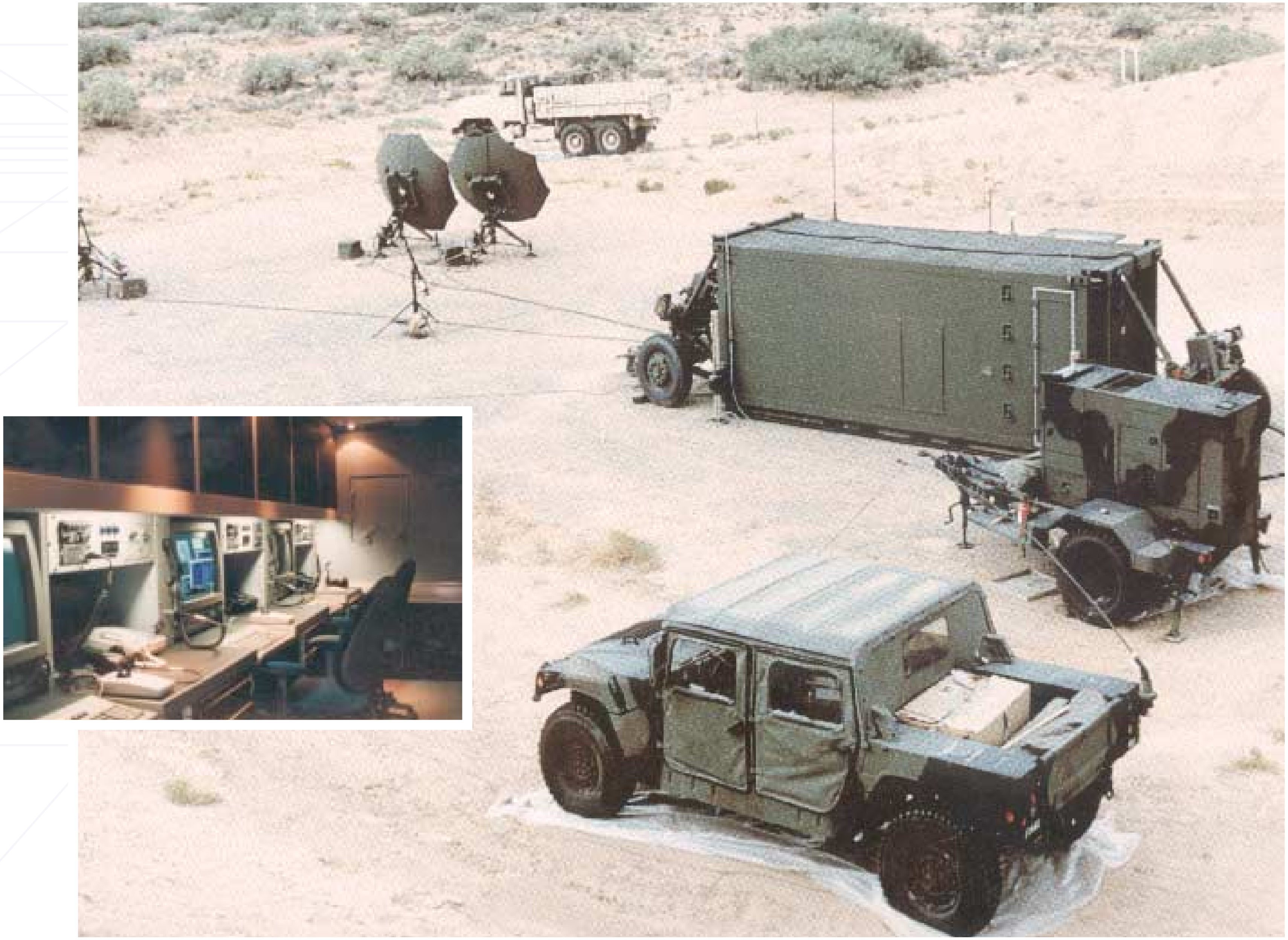
Projected Activities
- **2QFY03** Initiate initial operational test and evaluation.
- **2QFY04** Milestone III/Type Classification.

Prime Contractors
Intellitec (Deland, FL)



See appendix for list of subcontractors

Joint Tactical Ground Stations (JTAGS)



Joint Tactical Ground Stations (JTAGS)

Mission

Provide theater commanders with real-time, space-based, infrared warning, alerting and cuing information on theater ballistic missiles and other tactical events.

Description and Specifications

The Joint Tactical Ground Station (JTAGS) is a transportable information processing system that receives and processes in-theater, direct, downlinked data from defense support program (DSP) and follow-on space-based infrared system (SBIRS) satellites. JTAGS disseminates warning, alerting and cuing information on theater ballistic missiles and other tactical events throughout the theater, using existing communications networks.

A JTAGS unit consists of a standard 8 x 8 x 20 ft shelter with mobilizer, external collapsible high-gain antennas, standard military generator and standard 5-ton trucks as prime movers. JTAGS can be deployed worldwide; the system is transportable by C-141 aircraft and can be made operational within hours. For redundancy during contingency situations, the system will deploy in pairs. During crisis situations, the system will conduct joint operations.

JTAGS preplanned product improvement (P3I) Phase I upgrades, completed in FY00, provide Joint Tactical Information Distribution System (JTIDS) integration and data fusion with other sensors. The Phase II P3I (FY98-05) upgrades JTAGS to the SBIRS common multi-mission mobile processor (M3P). A memorandum of agreement between the Army and Air Force Program Executive Offices implemented the joint program development of the SBIRS M3P between the Army JTAGS Product Office and the Air Force SBIRS System Program Office. JTAGS/M3P is an Acquisition Category III joint interest program under the Program Executive Office Air and Missile Defense.

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

- **FY97** Fielded five production units to the European Command, Pacific Command, and Army Space Command Continental United States.
- **1QFY97** Initiated JTAGS P3I Phase I.
- **4QFY98** Initiated P3I Phase II JTAGS to M3P upgrade to permit operation with SBIRS and DSP satellites and provide coverage for both Army theater and Air Force strategic missions.
- **4QFY99** Conducted M3P preliminary design review.
- **2QFY00** Phase I upgrade fielding approval decision.
- **4QFY00** Completed P3I Phase I upgrades: Sensor fusion and JTIDS integration; Conducted M3P critical design review.
- **1QFY01** Conducted M3P integrated baseline review.
- **2QFY01** Completed M3P software design review.

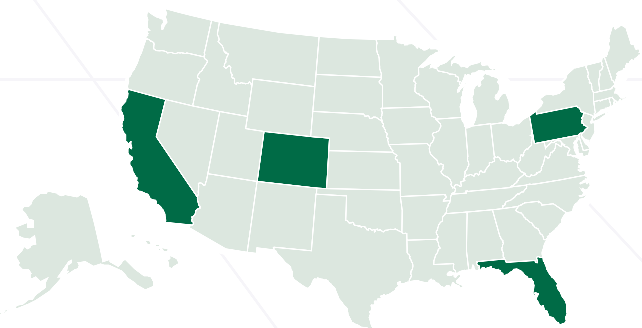
Projected Activities

- **4QFY02** Conduct developmental test.
- **1QFY03** Conduct operational test.
- **4QFY03-04** Field M3Ps (DSP only).

Prime Contractors

Deployment, Production, and P3I Phase I: GenCorp (Azusa, CA; Colorado Springs, CO)

P3I Phase II: Lockheed Martin (Sunnyvale, CA; Boulder, CO); GenCorp (Azusa, CA)



See appendix for list of subcontractors

MIDS LVT (2) Terminal

JTIDS Class 2M Terminal

Joint Tactical Information Distribution System (JTIDS)/Multifunctional Information Distribution System (MIDS)

Mission

Provide an interoperable joint and allied Link-16/Tactical Digital Information Link-J (TADIL-J) with air, ground, surface and subsurface platforms; enhance multiservice/ NATO interoperability and situational awareness; support Army air and missile defense engagement operations at division, corps and theater levels.

Description and Specifications

The Joint Tactical Information Distribution System (JTIDS)/Multifunctional Information Distribution System (MIDS) (Link-16) is the Department of Defense's primary tactical data link. JTIDS Class 2M and MIDS low volume terminal (LVT) (2) are two generations of the Army's solution for Link-16 connectivity. JTIDS and MIDS utilize time division, multiple access, and frequency hopping with forward error detection and correction.

JTIDS/MIDS provides the Link-16 for the near-real-time distribution of air and missile tracks, and nets air defense control centers for the control and engagement of air and missile defense operations. JTIDS Class 2M terminals are currently being fielded to Army air and missile defense platforms, while the more affordable follow-on, MIDS LVT (2) will fulfill the Army's future Link-16 requirements.

MIDS LVT(2) has the following specifications: weight 88 lbs,13" x 8" x 25", frequency band is 960-1215 MHz. MIDS LVT(2) is functionally interchangeable with JTIDS 2M.

Foreign Counterpart

Link-16 is a joint and multi-national system that will be interoperable with NATO units. MIDS was developed by a five-nation consortium and is being produced in both the United States and Europe.

Foreign Military Sales

Link-16: Netherlands Air Force procured two JTIDS Class 2M Terminals in FY96; German Air Force procured three JTIDS Class 2M Terminals in FY98. Two planning cases are in process for the Hellenic Air Force and Japanese Air Self Defense Force to support PATRIOT.

Program Status

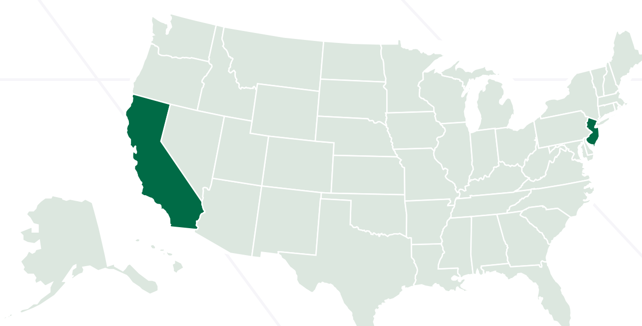
- **2QFY01** Functional verification test (Phase 1).
- **4QFY01** Low rate initial production (LRIP) 2 Decision.
- **4QFY01** Contract award.
- **1-2QFY02** First article qualification test.

Projected Activities

- **2QFY02** Functional verification test (Phase II).
- **2QFY02** LRIP deliveries begin.
- **3QFY02** Initial operational test and evaluation.
- **4QFY02** Full rate production decision.
- **4QFY02** Contract award.

Prime Contractors

ViaSat Incorporated (Carlsbad, CA)



See appendix for list of subcontractors

Joint Tactical Radio System (JTRS)

JTRS STEP 2C

JTRS Cluster 1 photo not yet available

Joint Tactical Radio System (JTRS)

Mission

Cluster 1

Provide the warfighter with a software-reprogrammable, multi-band/multi-mode-capable, networkable system that provides simultaneous voice, data and video communications to increase interoperability, flexibility and adaptability in support of varied mission requirements.

Step 2C

Provide validation for the Joint Tactical Radio System (JTRS) Software Communications Architecture (SCA) and provide the warfighter with an interim tactical operations center-to-tactical operations center data networking radio.

Description and Specifications

Cluster 1

The Cluster 1 Joint Tactical Radio System (JTRS) is a materiel solution for the requirements of the JTRS Operational Requirements Document (ORD) and the JTRS joint program office (JPO) mandated multi-channel software communications architecture (SCA) compliant hardware system hosting SCA compliant software waveforms. The SCA is a non-proprietary open systems approach that makes maximum use of commercial standards. The Cluster 1 JTRS effort addresses specific requirements for the U.S. Army Ground Vehicular, U.S. Army Airborne Rotary Wing Aircraft, U.S. Air Force Tactical Air Control Party (TACP) and U.S. Marine Corps applications. It is anticipated that each of these applications will have similar requirements and that the respective radio hardware solutions to meet these requirements will have a high degree of commonality.

Weight of radio TBD

Step 2C

The Joint Tactical Radio System (JTRS) 2C Radio is a tactical, wide-band data communications set. It is designed to provide a secure data networking capability between mobile users for the dissemination of data received from command and control systems operating throughout all echelons and major subordinate units. The JTRS-2C radio provides two independent communications channels capable of operating in data communications systems, making use of two wideband networking waveforms complying with the JTRS SCA. The radio operates in the 225 MHz to 400 MHz frequency band and is configured to support the hardware classes defined by the SCA hardware class structure.

Weight of radio 75 lbs; 85 lbs with mounting tray

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

Cluster 1

- Designated Acquisition Category (ACAT) 1D in August 2001.
- Acquisition strategy approved August 2001.
- **2QFY02** Milestone B scheduled.

Step 2C

- System in development.

Projected Activities

Cluster 1

- **3QFY02** Contract award.
- **3QFY04** Early operational assessment.

Step 2C

- **3QFY02** Electronic proving ground (EPG) test #l.
- **3QFY02** Test, analyze and fix.
- **3QFY02** EPG test #2.

Prime Contractors

Cluster 1: TBD

Step 2C: BAE Systems (Wayne, NJ)

See appendix for list of subcontractors

Joint Tactical Terminal (JTT)

Mission
Provide the joint warfighter with seamless, near-real-time tactical intelligence, targeting and situational awareness information.

Description and Specifications
The Joint Tactical Terminal (JTT) provides the critical data link to battle managers, intelligence centers, air defense, fire support elements and aviation nodes across all services. The JTT enables Army, Air Force, Navy, Marine Corps, and other agency users to exploit current intelligence broadcast networks. JTT supports the following intelligence networks:

- Tactical Reconnaissance Intelligence Exchange Service (TRIXS)
- Tactical Information Broadcast Service (TIBS)
- Tactical Related Applications Data Dissemination System (TDDS)
- Tactical Data Information Exchange System-B (TADIXS-B)
- Secondary Imagery Dissemination (SIDS)
- Integrated Broadcast Service (IBS) Architecture.

In addition to receiving intelligence data, the JTT provides data provider or relay functions. The JTT can be integrated into systems on vehicles, aircraft, ships, and fixed sites. There is also a reduced-size, stand-alone briefcase JTT-B variant of the baseline JTT/CIBS-M. The JTT-B has an associated laptop computer that provides terminal control and network display.

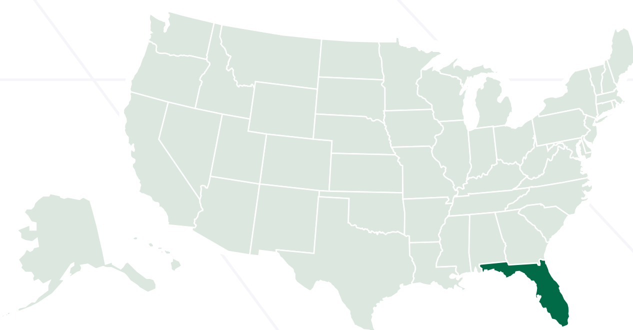
Foreign Counterpart
No known foreign counterpart

Foreign Military Sales
None

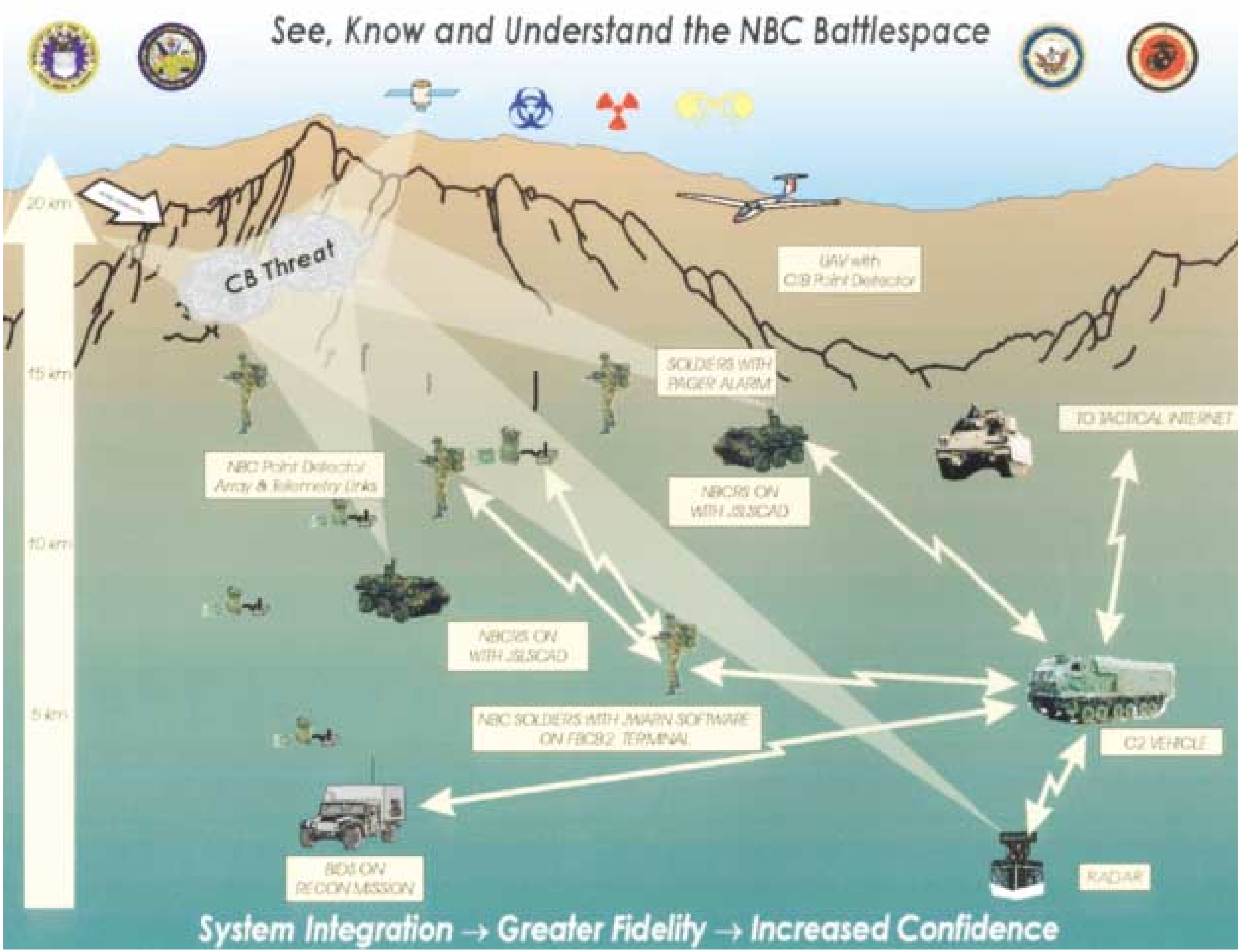
Program Status
- **4QFY97** Awarded contract for 132 JTTs.
- **3QFY98** Awarded options for 95 JTTs.
- **3QFY99** Awarded options for 85 JTTs and 16 JTT-Bs.
- **3QFY00** Began JTT delivery.
- **4QFY00** Awarded option for 43 JTT-Bs.
- **4QFY01** Awarded option for 10 JTTs.

Projected Activities
- **3QFY02** Milestone III, JTT receive-only.
- **4QFY02** Milestone III, JTT transmit/receive.

Prime Contractors
JTT and JTT-B: Raytheon (St. Petersburg, FL)



See appendix for list of subcontractors


See, Know and Understand the NBC Battlespace
20 km
15 km
10 km
5 km
CB Threat
UAV with CB Point Detector
SOLDIERS WITH PAGER ALARM
TO TACTICAL INTERNET
NBC Point Detector Array & Telemetry Links
NBCRS ON WITH JSLSCAD
NBCRS ON WITH JSLSCAD
NBC SOLDIERS WITH JWARN SOFTWARE ON FBCB2 TERMINAL
C2 VEHICLE
BIDS ON RECON MISSION
RADAR
System Integration → Greater Fidelity → Increased Confidence

Joint Warning and Reporting Network (JWARN)

Mission

Provide the joint forces with the capability to report, analyze, and disseminate nuclear, biological, and chemical (NBC) agent detection, identification, location and warning information; accelerate the warfighter's response to an enemy NBC attack.

Description and Specifications

The Joint Warning and Reporting Network (JWARN) system is a U.S. Marine Corps-led program with full participation by the Army, Navy, and Air Force. The JWARN system employs NBC-warning technology to collect, analyze, identify, locate, report, and disseminate information on NBC threats. JWARN software and hardware will be compatible and integrated with joint service command, control, communications, computer, and intelligence information (C4I2) systems. JWARN will be located in command and control centers and employed in making decisions about warning dissemination down to the lowest level on the battlefield. JWARN will provide additional data processing, as well as plan and report production and access to specific NBC information, all of which will improve the efficiency of NBC defense personnel assets.

The system has a three-block acquisition approach:

- **Block I:** Non-developmental item/commercial off-the-shelf (COTS)/government off-the-shelf (GOTS) products, standardizing warning and reporting.
- **Block II:** Provide the total JWARN capability by integrating NBC detector systems, warning and reporting software modules, and battlefield management software modules into the services' C4I2 systems.
- **Block III:** Preplanned product improvements will include artificial intelligence modules for NBC operations, an upgrade to match future C4I2 systems, and standard interfaces for use with future detectors.

Foreign Counterpart

The BRACIS (Biological, Radiological, and Chemical Information System) software system has been developed for the United Kingdom Armed Forces. BRACIS is a system for computerized NBC hazard prediction and warning, in accordance with the NATO standard ATP-45 (A).

Foreign Military Sales

None

Program Status

- **1QFY98** JWARN Milestone III approval for Block I; JWARN Block II approved to enter program definition and risk reduction (PDRR) phase.
- **2QFY00** JWARN Block II completed PDRR.
- **Current** Completed fielding of the COTS NBC analysis software pack and GOTS models; Integrate COTS software (with battlefield management functionality) with the maneuver control system (MCS) and the Windows 32-bit environment.

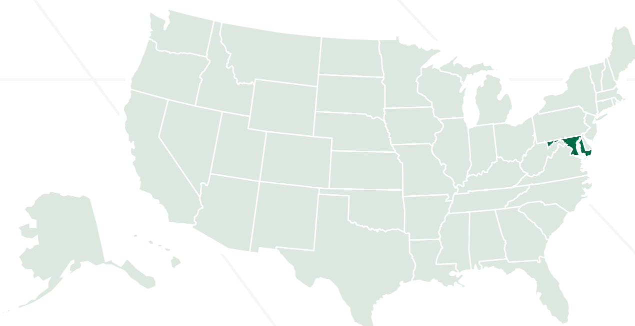
Projected Activities

- **2QFY02** Award JWARN Block II engineering and manufacturing development contract.
- **4QFY04** JWARN Block II Milestone III.

Prime Contractors

Block I: Bruhn NewTech (Columbia, MD)

Block II: To be determined



See appendix for list of subcontractors

Land Warrior (LW)

Mission

Provide significant improvement in soldier lethality, survivability, battle command, mobility, sustainment, tactical awareness and training/mission rehearsal.

Description and Specifications

Land Warrior (LW) is a first generation modular, integrated fighting system for infantry soldiers and soldiers in support of the close fight that combines an assortment of up-to-date commercial-off-the-shelf (COTS)/government-off-the-shelf (GOTS) technologies with some newly developed components and technologies to create a lethal, survivable soldier system linked into the digitized battlefield. LW combines computers, lasers, geolocation and radios with soldiers' mission equipment to achieve the Army Vision of enhancing the individual soldier's close combat, lethality, survivability and tactical awareness. LW will be interoperable with other Army systems as well as other U. S. services and allied military systems. The system's approach optimizes and integrates these capabilities, without adding to the soldier's combat load or logistical footprint. LW systems/components include:

- Modular weapon system with thermal weapon sight (TWS), laser rangefinder, digital compass, laser aiming light, daylight video sight (DVS), and close combat optic
- Integrated headgear with helmet-mounted display, TWS/DVS sight picture, and image intensifier
- Enhancements to protective clothing and individual equipment
- Integrated individual soldier computer/radio.

LW science and technology advanced components include optimized and integrated sight, combat ID, enhanced radio, and voice recognition.

Foreign Counterpart

The French FELIN Soldier System is the closest competitor to the LW; however, it is several years behind LW in development. LW continues to monitor foreign integrated soldier development efforts through participation in North Atlantic Treaty Organization (NATO) Working Group 3 meetings, international trade shows, and through the Soldier and Biological Chemical Command (SBCCOM) (Natick) International Office.

Foreign Military Sales

None. However, LW has been demonstrated to more than 40 foreign countries. Many of these countries, to include the United Kingdom, Canada, and Holland, have expressed continued interest in LW technology and cooperation.

Program Status

Panel III NATO has approved the NATO Soldier Modernization Plan (NSMP), which includes a requirement for the LW. The LW SDD program does not include any foreign co-development efforts; however, once the system is approved for production, foreign military sales (FMS), co-assembly, and co-production of some LW components will be considered.

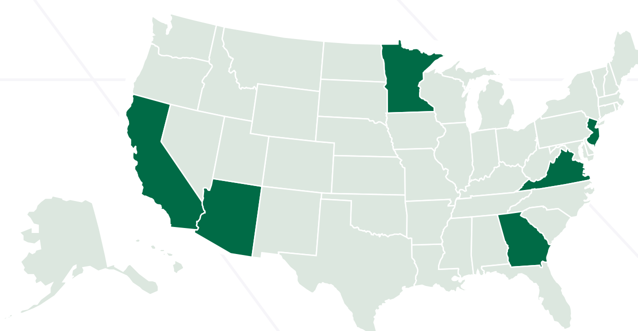
- **2QFY99** New COTS/GOTS technology inserted into the LW program.
- **4QFY00** LW Platoon successfully participated in Joint Contingency Force Advanced Warfighting Experiment at Ft. Polk.
- **2QFY01** Contract Award to develop V1.0 systems.
- **Current** LW is in the system development and demonstration (SDD) phase, refining the LW V1.0 system that will enter production in 1QFY04. The LW V1.0 baseline system is being produced for testing, which began in 1QFY02. LW will predominantly use other transactions (Section 845 of Public Law 103- 160) as the procurement vehicle, combined with the fixed-price payable milestones, to complete the SDD effort and program test schedule.

Projected Activities

- **2QFY02** Government developmental testing begins.
- **2QFY03** Initial operational test and evaluation (IOT& E) begins.
- **1QFY04** Milestone III full production decision for 48,801 systems.
- **4QFY04** First unit equipped.

Prime Contractors

Exponent (Menlo Park, CA); Computer Science Corp (Eatontown, NJ); Pacific Consultants (San Jose, CA); PEMSTAR (Rochester, MN); Omega Training Group (Columbus, GA)



See appendix for list of subcontractors

Lightweight Forward Entry Device (LFED)/Forward Entry Device (FED)/Pocket-Sized Forward Entry Device (PFED)

Lightweight Forward Entry Device (LFED)/Forward Entry Device (FED)/Pocket-Sized Forward Entry Device (PFED)

Mission

Enable users to plan, control and execute fire support operations at maneuver platoon, company battalion and brigade levels; compose, edit, transmit, receive and display alphanumeric and graphic messages for transmission over standard military radios.

Description and Specifications

The Lightweight Forward Entry Device (LFED)/Forward Entry Device (FED) is a programmable input/output device that is an integral part of the digitized system architecture. Using Forward Observer System (FOS) software, it provides the vital sensor-to-shooter link required for effective fires. Its most critical mission is the "Call for Fire." The LFED/FED also provides critical situational awareness for forward deployed field artillery units. It provides the initial digital entry device required for forward observers and combat observation lasing teams. It is used in the light/heavy divisions by the forward observer, field artillery battery commanders, and fire support team personnel.

The LFED/FED program provides the hardware platform to support Department of Defense mandated interoperability/Army digitization requirements. These include implementation of Military Standard-188-220 protocol and variable message format to support the new functional user requirements under the next software release, and command, control, communications, computers and intelligence (C4I) technical architecture requirements.

The Windows CE-based Pocket-Sized Forward Entry Device (PFED) utilizes existing Single Channel Ground and Airborne Radio System advanced system improvement program communications to provide the lightest, most powerful dismounted system for developing "Calls for Fire." It is fully interoperable with both the Advanced Field Artillery Tactical Data System and legacy fire support systems. In conjunction with the fielded PLGR GPS and MELIOS laser rangefinder, the PFED System enables rapid precision sensor-to-shooter and surveillance capabilities with "first round kill" accuracy. The intelligent application of Bluetooth wireless and voice recognition/control software technologies enables hands-free and cable free PFED operation.

The LFED/FED/PFED utilizes common hardware systems (CHS) components including the handheld terminal unit (HTU), ruggedized handheld computer (RHC), lightweight computer unit (LCU), stand-alone computer unit (SCU) and rugged-personal digital assistant (R-PDA).

Foreign Counterpart

United Kingdom: Data Entry Device

Foreign Military Sales

None

Program Status

- **1QFY01** PFED Software modification contract award.
- **2QFY01** Materiel Release, Software Package 12.
- **2QFY01** Division Capstone Exercise (DCX-1).
- **2QFY02** PFED system integration completed.

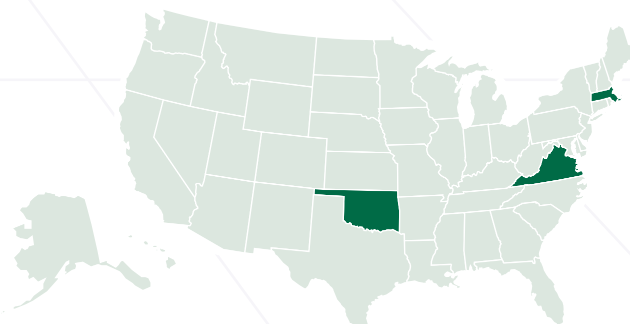
Projected Activities

- **2QFY02** PFED User Test.
- **2QFY02** HTU last unit equipped.
- **2QFY02** RHC materiel release.
- **3QFY02** RHC first unit equipped.
- **3QFY02** PFED materiel release.
- **4QFY02** LCU last unit equipped.
- **4QFY02** SCU materiel release.
- **1QFY03** SCU first unit equipped.
- **1QFY03** PFED first unit equipped.
- **1QFY04** Version 7.0 Software materiel release.

Prime Contractors

Hardware: General Dynamics (Taunton, MA)

Software: TELOS (Lawton, OK); Booz-Allen Hamilton (McLean, VA)



See appendix for list of subcontractors

Lightweight Laser Designator Rangefinder (LLDR)

Lightweight Laser Designator Rangefinder (LLDR)

Mission
Provide U.S. Army field artillery fire support teams and U.S. Marine Corps forward observers with the capability to detect, recognize, locate, and designate targets and send digital self/target location data to fire support computers.

Description and Specifications
The Lightweight Laser Designator Rangefinder (LLDR) is a man-portable, modular target location and designation system whose major components are the target locator assembly (TLA), laser designator assembly (LDA), battery and tripod. LLDR supports direct, indirect and laser-guided munitions.

The TLA contains a charge-coupled device camera, thermal imager, eyesafe laser rangefinder, digital magnetic compass, Global Positioning System (GPS), and digital export capability. The TLA performs boresight verification using "see-spot" technology.

The Department of Defense/NATO-compatible LDA can designate targets up to five kilometers away. Since the LLDR is modular, the target location capability can be operated without the LDA.

The LLDR weighs 35.3 lbs including TLA, LDA, interface cable, tripod, battery case, and battery and can be easily transported by a two-person team.

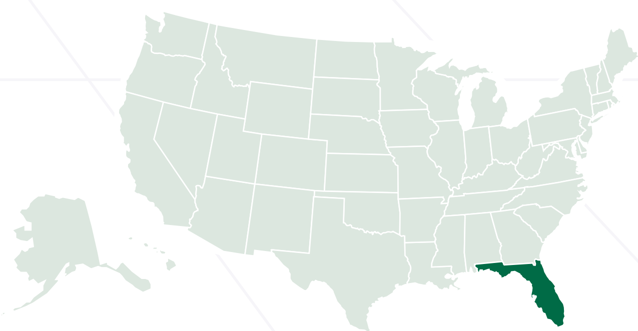
Foreign Counterpart
Although several countries have man-portable target location and/or target designation systems, there is no existing system providing all of the capabilities of the LLDR within a 35 lb package.

Foreign Military Sales
None

Program Status
- **4QFY01** Completed testing, Milestone C(LRIP).
- **1QFY02** Awarded low rate production contract.

Projected Activities
- **2QFY02** Award full rate, multi-year production contract.
- **3QFY02** Award full rate, multi-year production contract.
- **4QFY03** Initial fielding begins.

Prime Contractors
Northrop Grumman Electronic Systems (Litton Laser Systems) (Apopka, FL)



See appendix for list of subcontractors

Line-of-Sight Anti-Tank (LOSAT)

Mission
Provide highly lethal, accurate missile fire, effective against heavy armor systems and field fortifications at ranges exceeding tank main gun range, thus reducing the light infantry force lethality shortfall against heavy armor.

Description and Specifications
The Line-of-Sight Anti-Tank (LOSAT) Weapon System is an integral component of the Army Vision. LOSAT consists of four hypervelocity kinetic-energy missiles (KEM), and a second generation forward looking infrared (FLIR)/TV acquisition sensor, mounted on an air-mobile High Mobility Multipurpose Wheeled Vehicle (HMMWV) chassis. Key LOSAT advantages include the following:

- KEM overmatch lethality, which defeats all anticipated future armored-combat vehicles and hardened high-value targets, including bunkers and reinforced urban structures
- Deployability, including UH-60L sling load and C-130 air drop
- Compatibility with early-entry forces.

LOSAT also provides increased survivability and countermeasure effectiveness. LOSAT will operate to the maximum range of direct-fire combat engagements, providing dramatically increased rates of fire and enhanced performance under day and night, adverse weather, and obscured battlefield conditions.

KEM

Weight: 177 lbs

Length: 112 in

Diameter: 6.4 in

Range: Greater than the TOW Missile

Max velocity: > 1500 meters/sec

FIRE UNIT

Crew: 3

Combat weight: 11,630 lbs

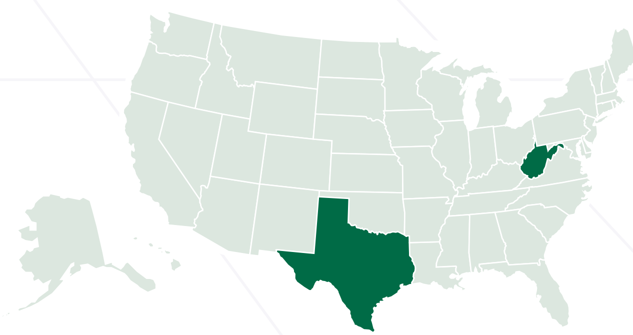
Foreign Counterpart
No known foreign counterpart

Foreign Military Sales
None

Program Status
- Restructured program accelerated production start by two years.
- Completed initial design requirements: allocation to fire unit and missile/launch pod performance requirements documents.
- Completed inertial measurement unit (IMU) performance verification ground tests.
- Completed the preliminary design review for the missile/launch pod and fire unit hardware and software designs.
- Completed two early soldier evaluations of the fire unit control and display layouts and functionality.
- Completed two risk-reduction tests to verify fire unit missile launch effects on HMMWV chassis and IMU in-flight performance.

Projected Activities
- Complete initial design of the missile and fire unit and initiate materiel purchases for prototype test quantities.
- Continue hardware-in-the-loop and closed-loop simulation evaluation and verification of hardware/software designs.
- Continue early soldier evaluations of emerging hardware/software designs.

Prime Contractors
Lockheed Martin (Dallas, TX)



See appendix for list of subcontractors


U.S. ARMY
U.S. ARMY

Longbow HELLFIRE

Mission
Provide an adverse weather, fire-and-forget, heavy anti-armor capability for the Army's AH-64D Longbow Apache attack helicopter.

Description and Specifications
The Longbow HELLFIRE missile is a fire-and-forget version of the HELLFIRE missile that uses inertial guidance. It is part of the AH-64D Longbow Apache attack helicopter (AH-64D) system that includes a mast-mounted fire control radar (FCR) and launcher. The Longbow FCR will locate, classify, and prioritize targets for the Longbow HELLFIRE missile. The Longbow HELLFIRE missile incorporates a millimeter-wave radar seeker on a HELLFIRE II missile aft-section bus.

The primary advantages of the Longbow missile include the following:

- Adverse weather capability (rain, snow, fog, smoke, and battlefield obscurants)
- Millimeter-wave countermeasures survivability
- Fire-and-forget guidance, which allows the Apache to launch and then immediately remask, thus minimizing exposure to enemy fire
- An advanced warhead capable of defeating all projected armor threats into the 21st century
- Reprogrammability to adapt to changing threats and mission requirements.

The combination of Longbow HELLFIRE's fire-and-forget capability and HELLFIRE II's precision guidance will provide the battlefield commander with flexibility across a wide range of mission scenarios. This permits fast battlefield response and high mobility not afforded by other anti-armor weapons.

Diameter: 7 in

Weight: 108 lbs

Length: 68 in

Foreign Counterpart
No known foreign counterpart

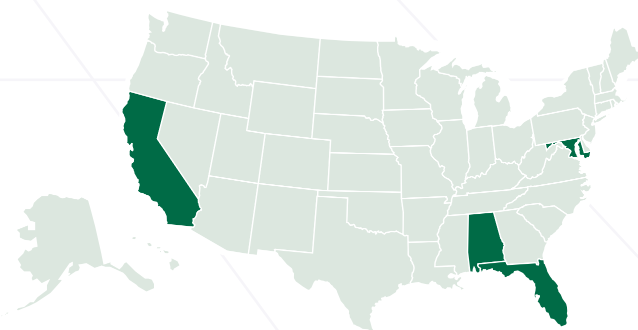
Foreign Military Sales
Singapore and Israel

Commercial Sale: United Kingdom

Program Status
- **1QFY99** Received authorization for FY99-03 multiyear contract.
- **April 30, 1999** Awarded multi-year contract.
- **December, 2001** Awarded 4th increment of multi-year program.
- **4QFY01** Delivered 4038 cumulative Longbow Hellfire missiles into inventory.

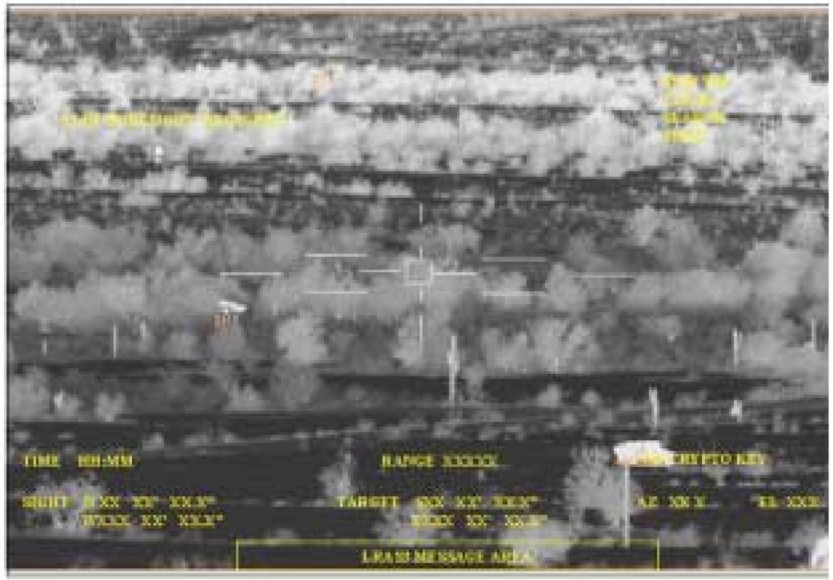
Projected Activities
- Continue fielding.
- Complete full rate production.
- Fund multiyear program year 5.

Prime Contractors
Lockheed Martin (Orlando, FL); Northrop Grumman (Huntsville, AL; Bethesda, MD)



See appendix for list of subcontractors

Day TV View Through LRAS3



Thermal View Through LRAS3

Long Range Advanced Scout Surveillance System (LRAS3)

Mission
Provide U.S. Army armor and infantry scout platoons with a long-range sensor system whose capability is significantly enhanced as compared to the currently fielded AN/TAS-6, night observation device, long range (NODLR).

Description and Specifications
The Long Range Advanced Scout Surveillance System (LRAS3) consists of a second generation forward looking infrared (FLIR) with long-range optics, an eyesafe laser rangefinder, a day video camera and a Global Positioning System (GPS) with attitude determination.

The LRAS3 permits scouts to detect targets at ranges in excess of three times beyond the NODLR system's capabilities. This additional standoff capability enables scouts to operate well outside the range of currently fielded threat direct fire and sensor systems. The LRAS3's line-of-sight, multi-sensor suite provides real-time target detection, recognition and identification capability to the scout with 24-hour and adverse-weather operation. The LRAS3 also determines far-target location coordinates for any target. The LRAS3 will operate in both mounted and dismounted configurations. The LRAS3 design includes a digital port for future export of targeting information.

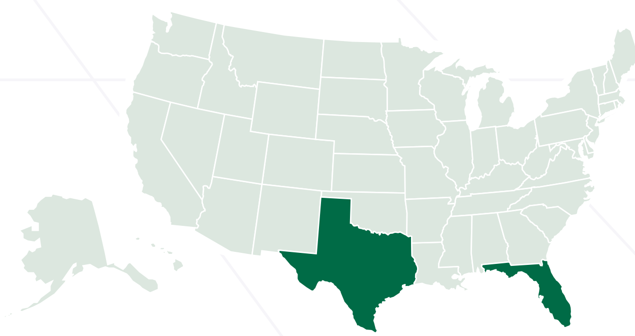
Foreign Counterpart
No known foreign counterpart

Foreign Military Sales
None

Program Status
- **2QFY01** Began initial production testing.
- **4QFY01** First unit equipped.
- **2QFY02** Completed of initial production testing.
- **2QFY02** Field second brigade set to III Corps.

Projected Activities
- **4QFY02** Field to Interim Brigade Combat Team 1.
- **4QFY02** Complete FBCB2 interface development.
- **1QFY03** Field third brigade set to III Corps.

Prime Contractors
Raytheon (McKinney, TX); DRS Optronics (Palm Bay, FL)



See appendix for list of subcontractors

Modernization

Versatile Computer Unit (VCU)

Notebook Computer Unit-Ruggedized (NCU-R)

Maneuver Control System (MCS)

Mission
Provide automated, online, near-real-time capability for planning, coordinating, monitoring and controlling tactical operations on the battlefield.

Description and Specifications
The Maneuver Control System (MCS) automates the creation and distribution of the common tactical picture of the battlefield and creates and disseminates operations plans and orders for combined arms maneuver commanders. MCS provides timely, accurate status information, as well as providing the Common Tactical Picture software supporting a battlefield situation display for all the Army Tactical Command and Control System (ATCCS) Battlefield Functional Areas (BFAs).

MCS Block IV software has as its foundation the Defense Information Infrastructure Common Operating Environment software and will be compliant with the joint technical architecture. MCS software development is synchronized with ABCS system and software integration efforts at the Central Technical Support Facility (CTSF). MCS will be fielded on common hardware.

Foreign Counterpart
The MCS is designed to interoperate with the respective command and control systems of Australia, Canada, France, Germany, Italy and the United Kingdom. The implementation is based upon NATO and Australia, Britain, Canada, and America (ABCA) agreements and therefore is extendible to other coalition partners.

Foreign Military Sales
None

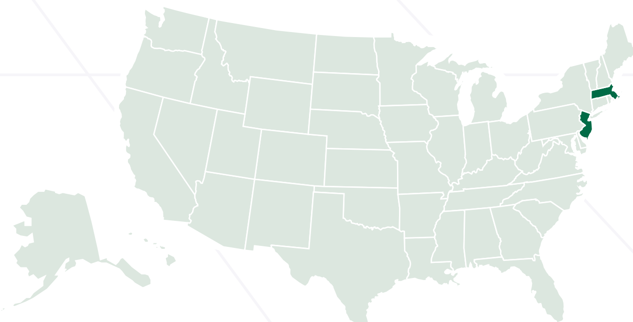
Program Status
- Successfully demonstrated MCS capabilities in the Army's Division Capstone Exercise 1 (DCX-1) in February 2001 and DCX-2 in October 2001.
- Completed development MCS 6.2 software (MCS initial operational testing and evaluation (IOT&E) capabilities) and delivered to CTSF to begin Army integration and developmental testing in preparation for MCS IOT&E in FY03.
- MCS Version 6.2 focused on supporting Force XXI Battle Command Brigade-and-Below (FBCB2) test events (FY02) and the MCS IOT&E (FY03).

Projected Activities
- Participation in FBCB2 testing.
- Support Interim Brigade Combat Team.
- Millennium Challenge 02.
- Conduct Block IV IOT&E in FY03 leading to subsequent Milestone III decision.
- Continue Advanced Warfighting Experiment participation.
- Continue development of MCS/ABCS software for the FDC.

Prime Contractors
Block IV Software: Lockheed Martin (Tinton Falls, NJ)

Versatile Computer Unit (VCU): General Dynamics (Taunton, MA)

Notebook Computer Unit (NCU): General Dynamics (Taunton, MA)



See appendix for list of subcontractors

Mission

Provide the U.S. Army with superior medium caliber armaments.

Description and Specifications

Medium caliber armaments provide a capability against a variety of battlefield threats including infantry fighting vehicles, dismounted infantry, anti-tank guided missile sites, aerial threats and lightly armored vehicles. The 25mm, M242 Bushmaster automatic cannon, mounted on the Bradley Family of Fighting Vehicles, is the primary medium-caliber system employed by the U.S. Army.

The M919 is an armor-piercing, fin-stabilized, discarding-sabot with tracer (APFSDS-T) cartridge; it is the primary armor piercing round for the M242 automatic cannon. The M919 cartridge employs a high length-to-diameter-ratio, depleted-uranium penetrator; high-energy propellant; an aluminum sabot; and a low drag, stainless steel fin assembly. The M919 represents a substantial performance increase over its predecessor, the M791 armor-piercing, discarding-sabot with tracer (APDS-T) cartridge. The M919 is currently in war stock and is used in the M2 and M3 Bradley Fighting Vehicles to defeat infantry fighting vehicles.

The M910E1 target practice, discarding-sabot-with-tracer (TPDS-T) will provide an improved target practice cartridge for the M919 APFSDS-T cartridge. The M910E1 will allow the soldier to train as he will fight. The trajectory will be ballistically similar to the M919 and possess a similar tracer signature to the M919 cartridge when viewed through the Bradley Fighting Vehicle's Improved Bradley Acquisition System. The M910E1 will replace the current M910 TPDS-T cartridge (designed to be ballistically similar to the M791) as the training round for both the M919 and the M791.

The fielded M792 is a high-explosive incendiary-with-tracer (HEI-T) cartridge used primarily against dismounted infantry, anti-tank guided missile sites, aerial threats, and lightly armored vehicles. Its designated training cartridge is the M793 target-practice-with-tracer (TP-T).

Other medium caliber initiatives include the medium caliber armament study, which is exploring future upgrades to the Bradley Fighting Vehicle armament system and support of the armament selection decision for the Future Combat System. Areas of interest include the demonstration of critical technologies such as air-bursting munitions and improved kinetic energy penetrator materials for increased lethality performance within the Advanced Light Armaments for Combat Vehicles Science and Technology Objective being executed by the Close Combat Armament Center. Also, Program Manager, Tank Main Armament Systems, is sponsoring a customer test for CTA International's 40mm case-telescoped ammunition and gun system at Aberdeen Proving Ground, MD.

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

M919

- In production.

M910E1

- Scheduled to complete development in FY03 and FY04. Production will begin in FY05 with final phase out of the M910 in FY06.

Projected Activities

- **2QFY02:** Award option for approximately 30,000 M919 cartridges.
- **2QFY03:** Award M910E1 two-year development contract.

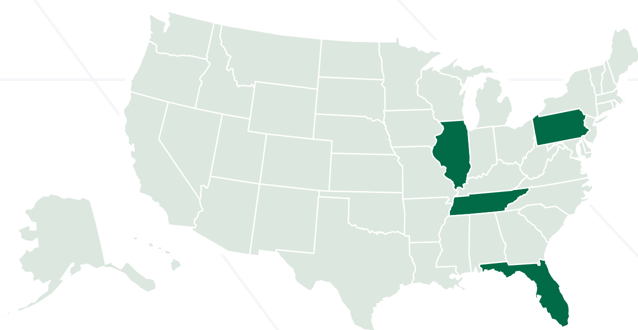
Prime Contractors

M919

General Dynamics-Ordnance and Tactical Systems (GD-OTS) (St. Petersburg, FL)

M910E1

- TBD



See appendix for list of subcontractors

Medium Extended Air Defense System (MEADS)

Mission
Provide lower-tier theater air and missile defense to maneuver forces and other land component commanders' designated critical assets throughout all phases of tactical operations.

Description and Specifications
The Medium Extended Air Defense System (MEADS) will use its netted and distributed architecture to ensure joint and allied interoperability, and to enable a seamless interface to the next generation of battle management command, control, communications, computers, and intelligence. MEADS's improved seeker/sensor components and its ability to link other airborne and ground-based sensors facilitates the employment of its battle elements. This provides a robust 360 degree defense against the full spectrum of theater ballistic missile, cruise missile, unmanned aerial vehicle, tactical air-to-surface missile, rotary, and fixed wing threats. MEADS will provide:

- Defense against multiple and simultaneous attacks by short range ballistic missiles, low radar cross-section cruise missiles, and other air-breathing threats
- Immediate deployment for early entry operations with C-130 and C-17 deployability
- Mobility to displace rapidly and to protect maneuver force assets during offensive operations
- A netted and distributed architecture and modular components to increase survivability and flexibility of employment in a number of operational configurations
- A significant increase in firepower with greatly reduced requirements for personnel and logistics.

Given these characteristics, MEADS can rapidly respond to a variety of crisis situations and satisfy the needs of the joint operational and tactical commanders.

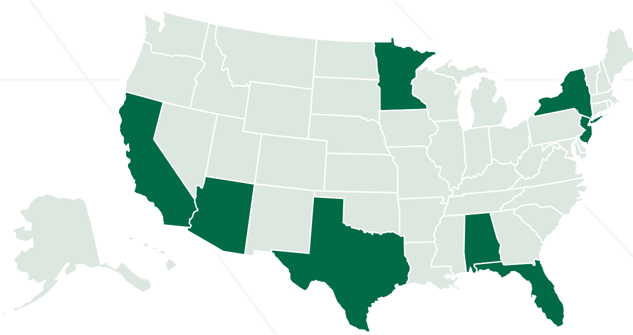
Foreign Counterpart
None

Foreign Military Sales
MEADS is a cooperative development program with Germany and Italy.

Program Status
- Completed the transition effort of the project definition and validation phase.
- The program was restructured in 1999 to add a risk reduction effort (RRE) phase to incorporate the PAC-3 Missile as the initial MEADS interceptor.
- In June 2000, Dr. Gansler gave formal approval to proceed with the RRE phase contingent upon joint (US/GE/IT) approval/signature of the RRE Memorandum of Understanding (MOU).
- The U.S. signed the MOU in December 2000 and Italy in April 2001. After some delays, Germany signed the MOU in July 2001.
- On July 10, 2001 the NATO Medium Extended Air Defense System Management Agency (NAMEADSMA), signed the RRE-contract with MEADS International, Inc. of Orlando, Florida.
- The cost share arrangement for the RRE contract is: U.S. (55 percent), Germany (28 percent) and Italy (17 percent). The period of performance is 32.5 months.

Projected Activities
- MEADS International, NAMEADSMA and the partner nations continue baselining the program to reflect the integration of the PAC-3 missile.
- NAMEADSMA and the partner nations continue developing an international cost and schedule consensus to support the national decision processes of each partner nation, and discussing overall acquisition strategy for the entire program.

Prime Contractors
MEADS International, Inc. of Orlando, Florida, a joint venture corporation composed of Lockheed Martin of the U.S. and EuroMEADS, a consortium of European Aeronautics Defense and Space (EADS) Company, LFK-Lenkflugkoerpersysteme and Alenia Marconi Systems



See appendix for list of subcontractors

Military Satellite Communications (MILSATCOM)–EHF

SMART-T AN/TSC-154

SCAMP-BLOCK I AN/PSC-11

SCAMP-BLOCK II

Mission

Achieve end-to-end connectivity to meet Joint Chiefs of Staff command, control, communications, computers, and intelligence requirements, and support the National Command Authority, commanders-in-chief, military departments, and other departments and agencies of the government.

Description and Specifications

Military satellite communications (MILSATCOM) includes satellites (space vehicles), satellite terminals, satellite control subsystems, communications subsystems interface devices, and all related equipment. MILSATCOM extremely high frequency (EHF) projects consist of:

Milstar Satellite program. This program provides worldwide, two-way, anti-jam, low-probability-of-intercept detection, secure voice, teletype, and data communications through all levels of conflict and crisis. Milstar provides a seamless-protected-communications capability to meet the Army's requirement for critical operational communications. Its range-extension capability is interoperable with all services and other satellite and ground systems, and provides assured communications to the warfighting commander. The terminals are capable of rapid setup and tear-down and provide uninterrupted, secure communications for tactical forces, even under harsh electromagnetic conditions.

Advanced EHF (AEHF) Satellite program. AEHF will greatly increase both the available single-user data rate and total satellite capacity while maintaining the essential features of Milstar.

SMART-T Terminal. The SMART-T, mounted on a standard High Mobility Multipurpose Wheeled Vehicle (HMMWV), provides range extension for the Army's Mobile Subscriber Equipment (MSE) system at echelons corps and below (ECB). It processes data and voice communications at both low data rate (LDR) and medium data rate (75 bps-1.544 Mbps). It will be the only wideband satellite capability at ECB.

SCAMP. The SCAMP is a manportable, battery-powered terminal that provides LDR secure voice at 2400 bps and secure data at 75-2400 bps. The legacy SCAMP Block I System has been recapitalized as a system enhancement program (SEP) to support the AEHF satellite capability (64 Kbps U/L (N/B)-128 Kbps D/L). Development is underway for technologies leading to an AEHF SCAMP Block II 12-15 lb manpackable terminal.

Foreign Counterpart

A memorandum of understanding (MOU) was signed with Canada in November 1999, for cooperation and participation in the development, production, operational and support phase of the AEHF satellite program. MOU discussion is ongoing with United Kingdom and the Netherlands for possible participation of a fifth satellite.

Foreign Military Sales

None

Program Status

SCAMP Block I:

- **FY01** Continue multi-service fieldings.

SCAMP AEHF SEP Manportable:

- Development engineering change proposal for AEHF awarded 28 Feb 01.

SMART-T:

- **2QFY01** Awarded development contract for AEHF upgrade.
- **4QFY01** Reliability growth testing successfully completed; Follow-on test and evaluation completed.
- **FY99/00/01** Fielded to critical units; 45 SMART-T systems currently hand-receipted/fielded.

Projected Activities

SCAMP Block I:

- **3QFY02** Complete fielding.

SCAMP AEHF SEP Manportable:

- Continue AEHF development.

SMART-T:

- **2QFY02** Award follow-on production/fielding contract; Continue fielding to multi-service units.

Prime Contractors

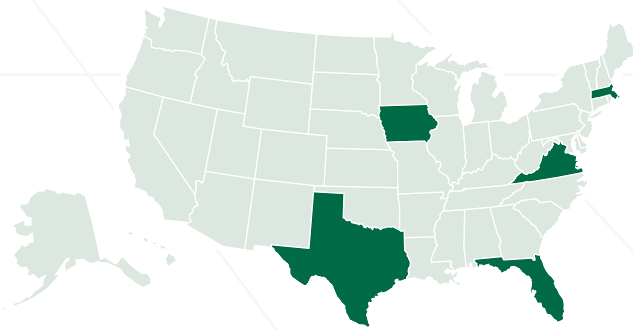
SCAMP Block I: Rockwell Collins (Cedar Rapids, IA)

SCAMP Block II

AEHF Manportable: Rockwell Collins (Cedar Rapids, IA)

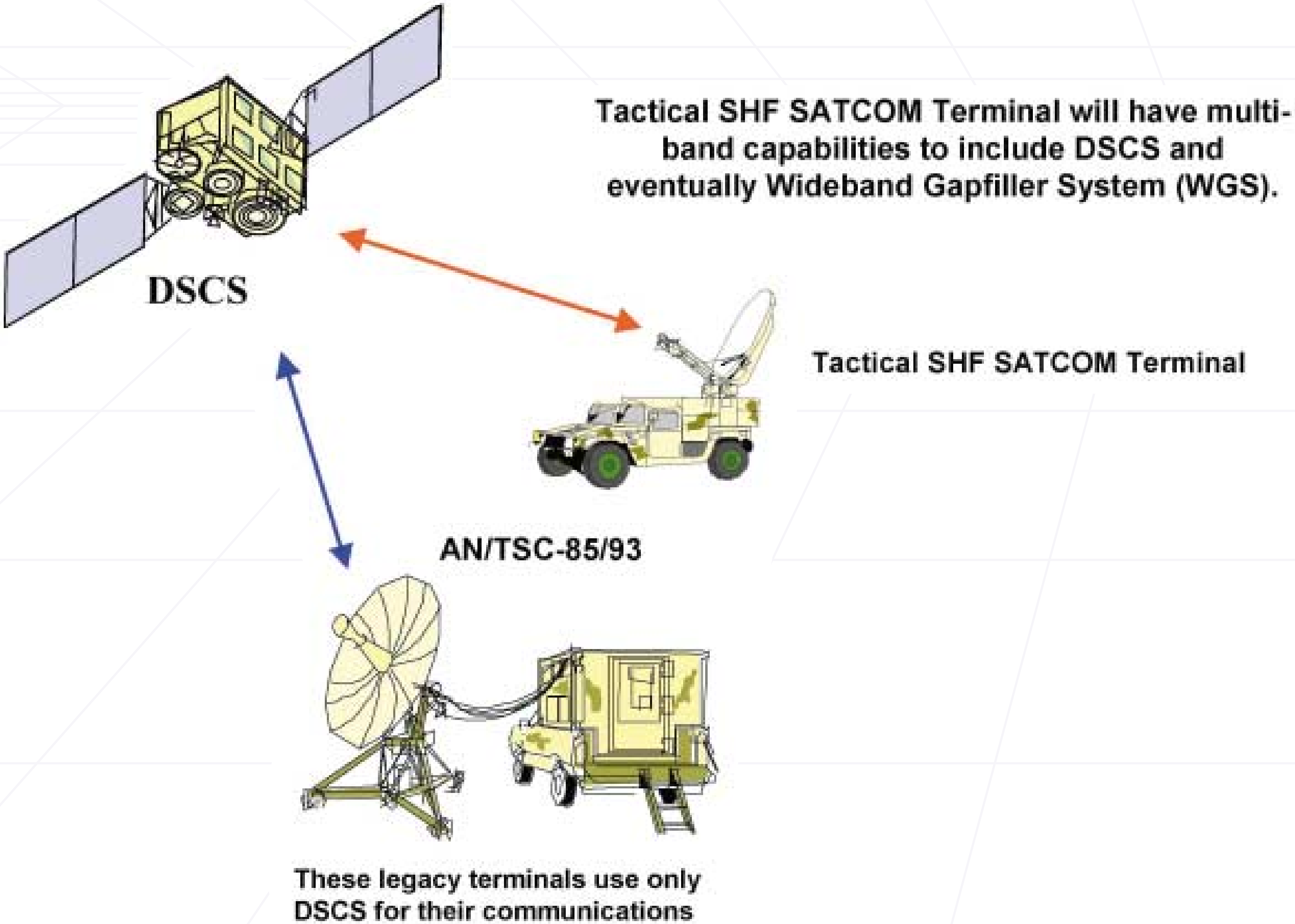
AEHF Manpackable: Lincoln Labs (Lexington, MA)

SMART-T: Raytheon (Marlborough, MA; Largo, FL)



See appendix for list of subcontractors

Military Satellite Communications (MILSATCOM)–SHF



Military Satellite Communications (MILSATCOM)–SHF

Mission
Achieve end-to-end connectivity to meet Joint Chiefs of Staff command, control, communications, computers, and intelligence (C4I) requirements, and support the National Command Authority, commanders-in-chief, military departments, and other departments and agencies of the government.

Description and Specifications
Military Satellite Communications (MILSATCOM) includes satellites (space vehicles), satellite terminals, satellite control subsystems, communications subsystems interface devices, and all related equipment. MILSATCOM super-high frequency (SHF) projects consist of:

Defense Satellite Communications System (DSCS). The DSCS provides worldwide coverage, Strategic Tactical Entry Point (STEP) access to the warfighter, and multi-channel reachback capability. The primary users are the Worldwide Military Command and Control System, the ground mobile forces (Army and USMC), Navy ships, Defense Information Systems Agency (DISA), the White House Communications Agency, the Diplomatic Telecommunications System, and support to allied nations.

Wideband Gapfiller System (WGS). The WGS is a satellite and terminal augmentation to the existing Defense Satellite Communications System (DSCS) to bridge the SHF requirements gap until the Advanced Wideband System is deployed. One WGS satellite will be capable of providing as much throughput capacity as the entire DSCS constellation. This system, to be fielded in FY04/05, will provide X-band communications, much like DSCS, as well as provide Ka-band and Global Broadcast Service (GBS) capabilities. The Army will use the preponderance of the Ka-band capability.

Advance Wideband System (AWS). Currently, the first AWS satellite launch is scheduled for FY09, and the system and requirements are currently under development.

SHF Terminals. The current generation of SHF terminals include large, fixed facilities (AN/FSC 78, AN/GSC/39 and 52) defined by the size of their antennas, receive/transmit capabilities and their mission. These facilities are generally co-located with Defense Information System Network (DISN) points of entry. They provide the satellite transmission path for the DISN, and serve as reach-back entry points for tactical terminals. Ground mobile force, or tactical terminals, are the AN/TSC-85 and 93, currently being modified to C models in order to expand their capability and extend their life while the replacement is being developed. The 85s and 93s are multichannel terminals capable of receiving, transmitting and processing low, medium and high-capacity multiplexed voice, data and teletype signals. The 85 is a nodal system, capable of communicating with up to four other GMF terminals (85s or 93s). The 85 provides a capacity of 48 channels of 16 or 32 Kbps voice and/or digital data. The 93 provides a capacity of 24 multiplexed channels.

The Tactical SHF SATCOM Terminal that will replace the 85s and 93s will provide multi-band capability (military X and Ka bands, and commercial C and Ku bands) in the SHF range. It will operate over commercial and military SHF satellites to include the DSCS, the WGS and possibly the AWS. The SHF Terminal will greatly increase tactical through-put capabilities (1.544 Mbps - 20 Mbps). The Tactical SHF Terminal will satisfy tactical and highly mobile, command and control, intelligence, fire support, air defense and logistics communications requirements in support of Army, USMC, Special Operations Command and Joint Communication Support Element. The terminals will be integrated on the HMMWV or the expanded capability vehicle (ECV).

Foreign Counterpart
No known foreign counterpart

Foreign Military Sales
None

Program Status
Tactical SHF SATCOM Terminal:

- Draft statement of work and specification have been released and proposals were due in Jan 02.

Projected Activities
Tactical SHF SATCOM Terminal:

- TBD

Prime Contractors
Tactical SHF SATCOM Terminal: TBD

See appendix for list of subcontractors


SPITFIRE


GBS

Mission

Achieve end-to-end connectivity to meet Joint Chiefs of Staff command, control, communications, computers, and intelligence (C4I) requirements, and support the National Command Authority, commanders-in-chief, military departments, and other departments and agencies of the government.

Description and Specifications

Military Satellite Communications (MILSATCOM) includes satellites (space vehicles), satellite terminals, satellite control subsystems, interface devices to communications subsystems, and all related equipment. MILSATCOM UHF projects consist of:

UHF Follow-on (UFO) Satellite System. The UFO system provides single channel UHF links between tactical ground forces, naval aircraft, ships, submarines and their ground stations, and between strategic air headquarters and the National Command Authority network. UFO satellites 8-10 will support Global Broadcast Service (GBS) capability, which will provide battlefield awareness information.

UHF Terminal. The AN/PSC-5 Spitfire UHF Manpack Terminal supports Army, Air Force, Marine Corps, and Special Operations Forces. The terminals use Fleet Satellite and the UFO satellites. The Spitfire has embedded communications security and demand-assigned, multiple-access capability. It will replace the existing inventory of single-channel satellite communications radios. The Spitfire currently supports voice and limited data communications at 2.4 Kbps, and there is a Pre-Planned Product Improvement (P3I) initiative that will increase that capability to 56K.

Global Broadcast System (GBS). GBS is an integrated communications system that provides users worldwide with a one-way, high-speed information flow of high-volume multi-media information, including imagery, maps, weather, logistics, air tasking orders, and other data. GBS will broadcast up to 24 Mbps. Service will be provided initially on the Navy's UFO 8, 9, and 10 satellites. The Wideband Gapfiller Satellites (WGS) will carry the next version of GBS capability. Transportable Ground Receiver Suites (TGRS) will receive information from GBS Ka-band (UFO/GBS) or commercial Ku-band transponders. The Theater Injection Point (TIP) will provide commanders-in-chief and the commander of the joint task force with an in-theater uplink transmit capability.

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

Spitfire: Australia; Italy

Program Status

Spitfire:

- 5732 Joint Service requirements on contract to date with 2930 Army Spitfires procured (5521 systems fielded through FY01).
- Fielding to 1st and 2nd IBCT unit; Continue modification work order/retrofit effort for Joint Service fielded radios; Continue fielding.

GBS:

- In low-rate initial production (LRIP).
- **3QFY01** Handreceipt 2 LRIP TGRS to Ft. Hood, TX.

Projected Activities

Spitfire:

- Continue modification work order/retrofit effort for Joint Service fielded radios; Continue fielding.
- Initiate a pre-planned product improvement (P3I) for the Army portion of radios to AN/PSC-5C, which provides the following major new functions MELP, ADC, IP, 56Kbps (non DAMA), SINCGARs SIP.

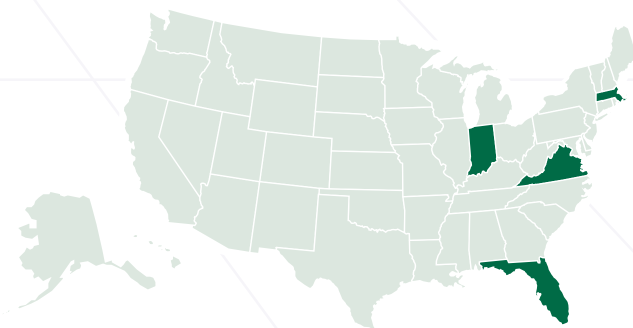
GBS:

- **3QFY02** Handreceipt TIP #1 to the 11th Signal Brigade, Ft. Huachuca, AZ.
- **2QFY02** Handreceipt 1 LRIP TGRS to IBCT 2.
- **4QFY02** Handreceipt 1 LRIP TGRS to IBCT 3.

Prime Contractors

Spitfire: Raytheon (Fort Wayne, IN; Largo, FL)

GBS: Raytheon (Reston, VA)

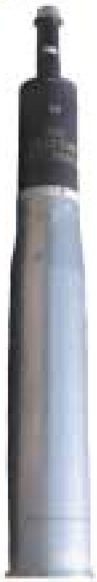


See appendix for list of subcontractors

Mobile Gun System (MGS) Main Gun Ammunition

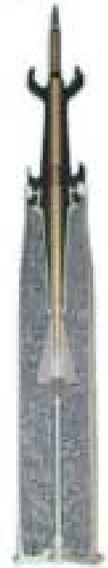
105MM Ammunition for MGS

M393A2 (HEP)



M456A2 (HEAT)

Conceptual XM1040Cartridge



M900 APSDS-T (KE)

Mission

To provide the U.S. Army with world-class, direct-fire, main armaments for use in the Mobile Gun System (MGS).

Description and Specifications

The MGS will employ four types of 105mm tactical ammunition. High explosive/high explosive plastic (HE/HEP) ammunition will destroy hardened enemy bunkers, machine gun and sniper positions, and create openings in walls through which infantry can pass. Kinetic energy (KE) ammunition will be employed to destroy a variety of Level II armored vehicles. High explosive, anti-tank (HEAT) ammunition is well suited to defeat a variety of thin-skinned vehicles and provide fragmentation effects. Finally, anti-personnel (canister) ammunition will defeat attacking dismounted infantry in the open. HE/HEP, KE and HEAT each have or will have complementary training ammunition.

HE/HEP ammunition will provide the capability for the MGS to meet its Key Performance Parameter of creating an opening in a double reinforced concrete wall through which infantry can pass. The M393A3 HE cartridge will exceed the current performance obtained from the M393A2 HEP cartridge against the concrete wall. The M393A2 HEP cartridge was type-classified in 1965, has exceeded the shelf life for which it was designed and does not meet current standards for soldier safety. The new HE round is being procured as a non-developmental item (NDI).

An inert cartridge will be developed to provide for gunnery qualification and training. It will be similar in appearance and ballistically similar to the M393A3 tactical cartridge. Currently, there are approximately 15,000 serviceable training cartridges in the Army's stockpile, which could support short-term training requirements. This item is being procured as an NDI in parallel with the M393A3 cartridge.

The current KE cartridge, the M900 Armor Piercing, Fin Stabilized, Discarding Sabot with Tracer (APFSDS-T), will provide the MGS with the capability to destroy a variety of light skinned and armored vehicles (through the T-62 tank) in a self-defense role. The cartridge is currently in inventory and was originally developed and procured for the M1 Abrams tank. This round was type-classified in 1989.

The HEAT cartridge, M456A2, provides the MGS a capability against a multitude of thin-skinned targets, infantry fighting vehicles and light tanks. While there is ample supply of these cartridges in inventory, they are approaching the end of their shelf life. This round was type-classified in 1980.

Anti-personnel (canister) ammunition, XM1040, will provide the MGS with the capability to effectively provide rapid, lethal fire against massed assaulting infantry at close range (500 meters or less). The cartridge is intended to be a simple, low-cost, low-technology cartridge, similar in concept to a shotgun shell. There are no cartridges that meet this requirement in the current inventory. Development begins in FY03 and will leverage technology with the 120mm, XM1028 canister cartridge program.

Foreign Counterpart

Various other countries produce 105mm tank ammunition.

Foreign Military Sales

None

Program Status

High explosive tactical cartridge (M393A3): Future shelf life of the M393A2 HEP stockpile will continue to be assessed. Reprocurement of new ammunition is required (M393A3).

High explosive training cartridge (TP-T to complement M393A3): Inadequate stockpile to meet requirements. Reprocurement of new ammunition is required.

M900 APFSDS-T, M456A2 HEAT-T, M724A1 TPDS-T, M490A1 HEAT TP-T: Current inventory meets requirements. No procurement action is anticipated.

Projected Activities

High explosive tactical cartridge (M393A3):

- **2QFY02** award sample delivery contract.
- **1QFY03** award single production contract.

High explosive training cartridge (TP-T to complement M393A3):

- **2QFY02** award sample delivery contract.
- **2QFY03** award single production contract (same contractor as the tactical cartridge).

Canister Anti-personnel Cartridge (XM1040):

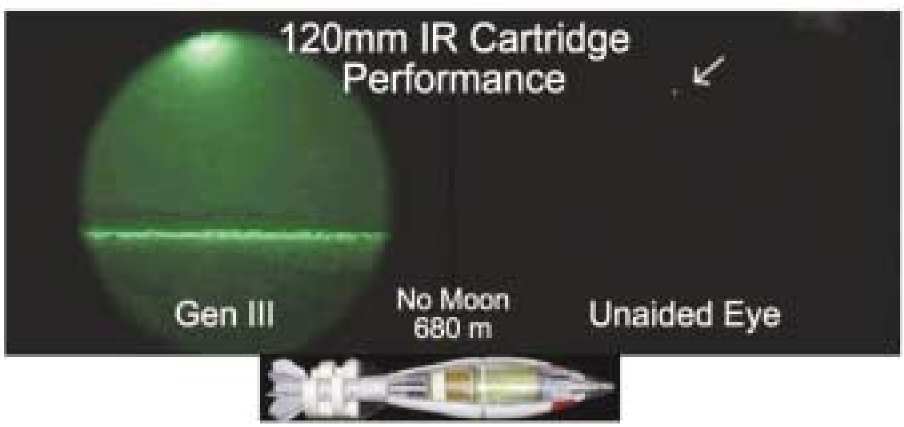
- Development will start in FY03.

Prime Contractors

None currently identified

See appendix for list of subcontractors

Mortar (120mm)



Mortar (120mm)

Mission
Provide organic indirect fire support to the maneuver unit commander.

Description and Specifications
The 120mm mortar system is a conventional smoothbore, muzzle-loaded mortar system that provides increased range, lethality, and safety compared to the World War II-vintage 4.2-inch (107mm) heavy mortar system it replaced in mechanized infantry, motorized, armored, and cavalry units. It is employed in towed (M120) and tracked carrier versions (M121) and in the Brigade Combat Team IAV wheeled mortar carrier. It fires a family of enhanced, U.S.-produced ammunition. The mortar fire control system (MFCS) will provide Paladin-like (M109A6) fire control capability that greatly improves mortar lethality, responsiveness and crew survivability. MFCS links mortar fires with the digital battlefield. It integrates a fire control computer with an inertial navigation and pointing system, allowing crews to fire in less than one minute, down from the current 8-12 minute (day/night) standard. The M303 sub-caliber tube insert enables 120mm mortar crews to perform cost-effective live-fire training with stockpiled older M300 series 81mm ammunition. New infrared illumination ammunition, the first of its kind in the world, provides enhanced night fighting capability. Advanced munitions include the XM395 precision guided mortar munition (PGMM) and the XM984 dual purpose improved conventional munition (DPICM). PGMM is a 120mm extended-range precision-guided munition with a strap-down laser detector seeker, making it a surgical strike, organic weapon for the Battalion Commander. DPICM is an extended-range munition that incorporates composites to maximize the number of dual-purpose grenades that can be carried.

Range: 7,240 m

Rate of fire: 16 rounds/min for the first minute; 4 rounds/min sustained

Weight: 319 lbs

Crew: 4 M121 carrier-mounted on the M1064; 5 M120 towed

Ammunition: High explosive, smoke, illumination (visible light and infrared), full-range practice

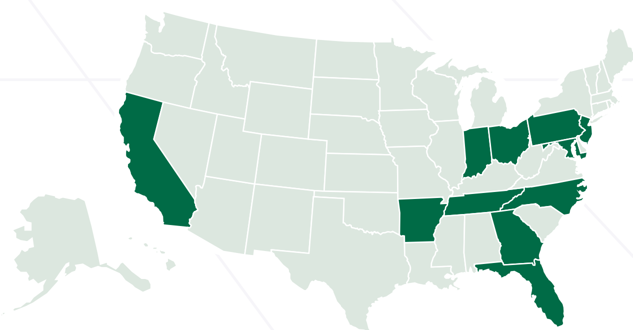
Foreign Counterpart
Many countries have similar systems.

Foreign Military Sales
None

Program Status
Initial fielding of the 120mm mortar system is complete; M120 version was issued to the Initial Brigade Combat Team and 82nd Airborne Division. The M67 sight unit, currently used on 120mm mortar, qualified for use on the M224 60mm and M252 81mm mortars. MFCS currently in engineering and manufacturing development (EMD). The M934A1 high explosive round production has commenced. The XM395 PGMM and XM984 DPICM advanced technology demonstrations are complete. PGMM has transitioned to PM mortar management as a component advanced development (CAD) program. DPICM future development will be based on funding.

Projected Activities
- **PGMM:** In FY02 PGMM will enter CAD.
- **DPICM:** In FY02, DPICM will enter CAD based on funding availability.
- **XM930 Visible Light Illum Round:** In FY02, initial fielding scheduled upon completion of successful reliability testing.
- **M983 Infrared Illuminating Round:** Fielding in FY02.
- **MFCS:** In FY02, MFCS completes software development, continues technical testing, undergoes computer reliability study, conducts initial operational test, and begins fielding.
- **M934A1E1 HE round (IM compliant):** In FY03, production of a new insensitive munition cartridge scheduled. Contract award to develop and qualify an insensitive munition solution for the M934A1 HE round approved.

Prime Contractors
GD OTS (Camden, AR); Pocal Industries (Scranton, PA); SNC-TEC (Quebec, Canada); KDI (Cincinnati, OH); Chamberlain Manufacturing Corporation (Scranton, PA); Pine Bluff Arsenal (Pine Bluff, AR); Lockheed Martin (Orlando, FL; Archbald, PA); GD OTS (St. Petersburg, FL); Matech (Hebron, MD); Brockway Standard (Atlanta, GA); United Ammo Container (Milan, TN); Crane AAA (Crane, IN); Mills Manufacturing (Ashville, NC); Junghans (Germany)



See appendix for list of subcontractors

Near Term Digital Radio System (NTDRS)

Near Term Digital Radio System (NTDRS)

Mission

Provide on-the-move, tactical-operation-center-to-tactical-operation-center (TOC-to-TOC) communications data backbone for the First Digitized Division (FDD) and the first two Transformation Brigades; provide the primary wideband waveform data communications network between Tactical Brigade and Battalion TOCs.

Description and Specifications

The Near Term Digital Radio System (NTDRS) is a largely non-developmental item research and development program that fulfills near-term requirements for a higher capacity data network between critical nodes within the Tactical Internet. NTDRS provides additional network capacity in the timeframe required for FDD. NTDRS will be the primary data hauler between the brigade TOCs and the battalion TOCs, high data rate logistics hosts and all mobile TOCs. It will also help support the mobile subscriber equipment (MSE) tactical packet network (TPN) and enhanced position location reporting system (EPLRS) data networks for FDD. It provides the following:

- Operation on-the-move in all terrain and foliage
- Tactical multi-net gateway/Internet controller interfaces for seamless links with Single Channel Ground and Airborne Radio System (SINCGARS) data, MSE TPN, and EPLRS data nets
- Compliance with the Joint Technical Architecture-Army
- Secret high system operations.

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

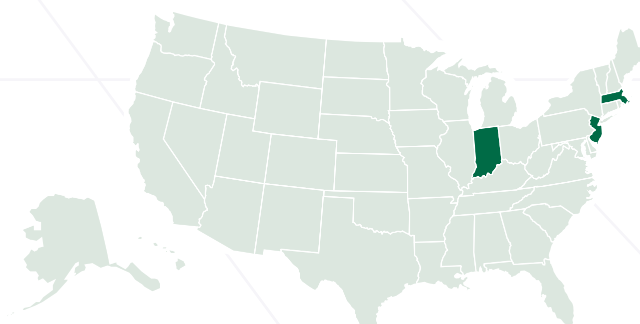
- **FY01** Deployed 104 NTDRS to FDD and 44 NTDRS to 1st Interim Brigade Combat Team (IBCT) to perform TOC-to-TOC data networking mission.

Projected Activities

- **2QFY02** Support 02 and NTC rotations 02-05.
- **3QFY02** Deploy 44 NTDRS to the 2nd IBCT.
- **3QFY02** Support NTC rotations 02-08 and Millennium Challenge 02.

Prime Contractors

International Telephone and Telegraph (ITT) (Fort Wayne, IN; Clifton, NJ); BBN (Cambridge, MA)



See appendix for list of subcontractors

AN/PVS-7D Night Vision Goggle

AN/PEQ-2A
Target Pointer/Aiming Light

AN/AVS-6 (ANVIS) &
AN/AVS-7 (ANVIS HUD)

PVH-1A/2A Lightweight Video
Reconnaissance System

AN/PEM-1 Laser Borelight

25mm Upgrade Program for AN/TVS-5A
Crew Served Weapon Sight

AN/PVS-14 Monocular
Night Vision Device

AN/PVS-10 Sniper Night Sight

Night Vision (NV) Image Intensification (I2) System

Mission
Provide a family of several different night vision image intensifier systems to enable soldiers to operate more effectively and safely in day or night and under degraded battlefield conditions.

Description and Specifications
Night vision (NV) image intensification (I2) and laser systems include the following:

The **AN/AVS-6 Aviator's Night Vision Imaging System (ANVIS)** is a helmet-mounted, direct-view image intensification pilotage device that enables rotary-wing operations under very low ambient light conditions.

The **AN/AVS-7 Aviator's Night Vision Imaging System Heads-up Display (ANVIS HUD)** provides aviators with real-time, high-resolution flight and navigational information superimposed on the visual image of the ANVIS.

The **AN/PVS-7D Night Vision Goggle (NVG)** is a head or helmet-mounted, binocular goggle, with 1X magnification, used in combat, combat support, and combat service support operations. The system has a range of 150 meters for a man-size target under starlight conditions, weighs 1.5 lbs, and has a field of view of 40 degrees.

The **AN/PVS-14 Monocular Night Vision Device (MNVD)** provides leaders of combat infantry units with a small, lightweight, 1X magnification night vision device for use in observation and command and control. The system has a range of 150 meters for a man-size target under starlight conditions, weighs 14 ounces, and has a field of view of 40 degrees.

The **AN/PVS-10 Sight, Night Vision Sniper Scope (SNS)** is an integrated day/night sight for the M24 sniper rifle. Magnification for day and night operation is 8.5X, and the system's maximum weight is 4.9 lbs.

The **AN/TVS-5A** is a long-range night vision sight used with the MK-19 grenade launcher and the M2 machine gun. The system weighs 6.6 lbs, has a magnification of 5.8X, and provides a field of view of 9.2 degrees

The **AN/PVH-1A** and 2A Lightweight Video Reconnaissance System (LVRS) is used by surveillance or reconnaissance teams to capture, compress, and transmit still-frame images over military radios to a base station located at a higher echelon.

The **AN/PEM-1 Borelight Laser System** enables precise zeroing of aiming lights or weapon sights on small caliber weapons. The borelight weighs 4.5 ounces.

The **AN/PEQ-2A Target Pointer/Illuminator/Aiming Light (TPIAL)** is a dual laser device that can be hand-held or weapon-mounted. Effective range of both the aiming light and the illuminator is between 600 - 2000 meters.

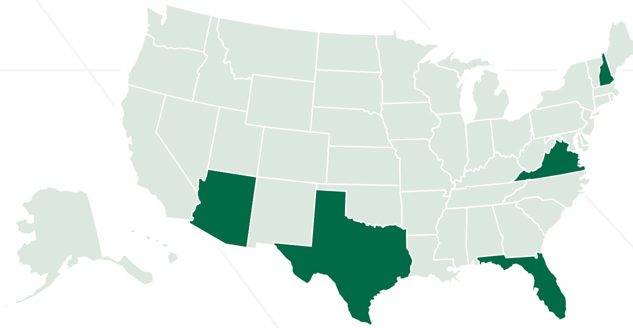
Foreign Counterpart
Image intensification and laser devices are produced in many countries.

Foreign Military Sales
AN/AVS-6(V)1 and 2: Bahrain, Colombia, Greece, Jordan, Mexico, Saudi Arabia, Taiwan, Thailand, United Arab Emirates; ANVIS/HUD: Israel; AN/PVS-7B: Italy, Kuwait, Mexico, Portugal, Saudi Arabia, Taiwan; AN/PVS-7D: Bahrain; AN/PVS-14: Greece, Belgium; AN/PVS-10: Bahrain.

Program Status
- **1QFY01** AN/PVS-7D and AN/PVS-14 fielded to 1st Brigade Combat Team (BCT).
- **1-4QFY01** AN/TVS-5 MWO completed on 2,257 fielded systems.
- **2QFY01** First delivery of enhanced performance GEN3 AN/PVS-7D and AN/PVS-14.
- **4QFY01** New AN/AVS-6(V)3 ANVIS underwent pre-production testing.
- **4QFY01** Completed fielding of the advanced heads up display (AHUD) retrofit effort.
- **1QFY02** SNS and Laser Borelight System fielded to 1st and 2nd BCT.

Projected Activities
- **1-2QFY02** Begin production and fielding of AN/AVS-6(V)3 ANVIS.
- **2QFY02** Complete fielding of AN/PVS-7D and AN/PVS-14 to 2nd BCT.
- **1-4QFY02** Field advanced HUD software upgrade for the CH-47 Improved Engine Configuration.
- **4QFY02** Complete AN/TVS-5 MWO (6,502 additional systems).
- **4QFY02** Qualification and operational testing of the ANVIS HUD Advanced Symbol Generator.

Prime Contractors
International Telephone and Telegraph (ITT) (Roanoke, VA); BAE Systems (Austin, TX); Northrop Grumman (Garland, TX; Tempe, AZ); Lockheed Martin (Orlando, FL; Nashua NH); Insight Technology, Inc. (Londonderry, NH)



See appendix for list of subcontractors

Objective Individual Combat Weapon (OICW)

Objective Individual Combat Weapon (OICW)

Mission
Provide the infantry soldier with a decisive overmatch capability by developing the next-generation weapon system that will dramatically increase lethality, range and capability through the use of high explosive air-burst ammunition.

Description and Specifications
The Objective Individual Combat Weapon (OICW) will replace selected M16 rifles and M4 carbines. The modular, dual-barrel OICW will combine the lethality of 20mm air-bursting munitions and 5.56mm NATO ammunition with a full-solution fire control to effect decisively violent and suppressive target results and to greatly improve small arms performance. This fire control will incorporate a laser rangefinder, ballistic computer, direct view optics, video sight, electronic compass, thermal capability and a target tracker.

The OICW's high explosive air bursting munitions will be capable of defeating not only exposed targets, but those in defilade (targets that have taken cover behind structures, terrain features and/or vehicles), a capability lacking in current rifles and carbines. The OICW will provide an overmatch in system effectiveness while increasing the versatility and survivability of the soldier by:

- Increasing the infantryman's stand-off range out to ~1,000 meters
- Providing effective day/night operation
- Providing significant improvements in lethality and target effects (probability of incapacitation and suppression).

The OICW will be fully compatible with the digital battlefield and will provide the lethality upgrade for the Land Warrior.

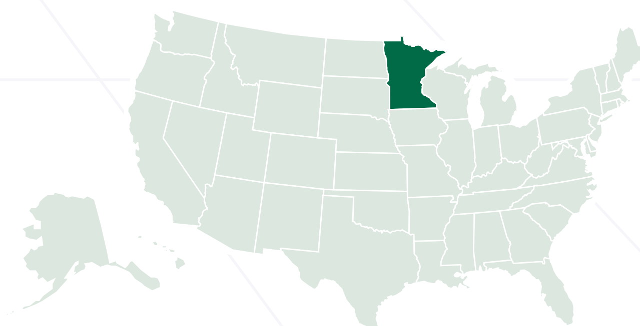
Foreign Counterpart
No known foreign counterpart

Foreign Military Sales
None

Program Status
- **FY00** The U.S. Government joint service and user team and the contractor team led by Alliant Techsystems completed the OICW advanced technology demonstration (ATD). The ATD successfully demonstrated the concept and highlighted areas of risk.
- **2QFY00** A Milestone I decision was made and the OICW Program transitioned to the Office of Product Manager, Small Arms (OPMSA).
- **3QFY00** A program definition and risk reduction (PDRR) effort was initiated under OPMSA management and a PDRR contract was awarded.

Projected Activities
- **FY01-05** Implement system development & demonstration (SD&D) phase, which will utilize simulation and modeling for acquisition, requirements and training (SMART), as well as building prototype hardware to produce and test a near-final design of the OICW to meet user requirements for the SD&D exit criteria.
- **2QFY02** A decision-in-process review is scheduled with the Army System Acquisition Review Council (ASARC) to recommend a "go" or "no go" decision.
- **FY05-08** SD&D/low rate initial production (LRIP).
- **FY09** First unit equipped.

Prime Contractors
Alliant Techsystems (Hopkins, MN)



See appendix for list of subcontractors

Mission

Provide a modernized, real-time meteorological capability over an extended battlespace; provide vital target-area meteorological information for the employment of “smart” weapons, ensuring proper munition selection and optimal aim point calculations.

Description and Specifications

The meteorological measuring set (Profiler) (MMS-P), AN/TMQ-52, integrates profiles from ground-based meteorological sensors with meteorological satellite data to provide vertical profiles of the atmosphere. The system incorporates a suite of meteorological sensors and associated software/models that provide artillery forces with current or expected weather conditions, along the projectile trajectory and within the target area. The system’s software is capable of providing artillery meteorological messages every 30 minutes based on an atmospheric model. The system will process the meteorological data as it is received and convert it into proper message formats.

The MMS-P is a tactical automated meteorological system, housed in a standard integrated command post system (SICPS) shelter, mounted on a High Mobility Multipurpose Wheeled Vehicle (HMMWV). The system will interface with:

- Advanced Field Artillery Tactical Data Systems (AFATDS)
- Multiple Launch Rocket System (MLRS) Fire Direction System (FDS)
- Interim Fire Support Automation System (IFSAS)
- Integrated Meteorological System (IMETS).

The Profiler will use Joint Technical Architecture-Army Defense Information Infrastructure Common Operating Environment hardware and software.

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

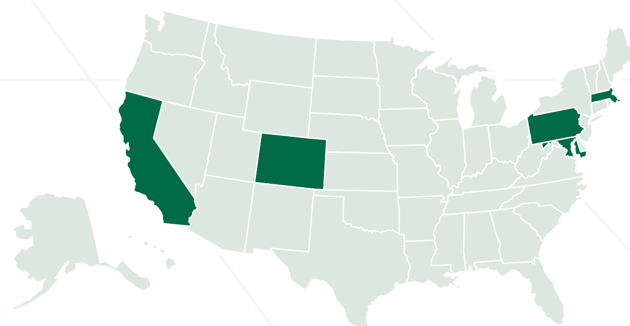
- Currently in system development and demonstration phase.
- **1QFY01** Conducted post award conference.
- **2QFY01** Preliminary design review completed.
- **1QFY02** Critical design review.

Projected Activities

- **2QFY02** Fabrication of system development and demonstration articles.
- **4QFY02** Developmental testing.

Prime Contractors

Environmental Technologies Group, Inc. (Baltimore, MD)



See appendix for list of subcontractors

PROVIDING FORCE PROTECTION

- Stationary and OTM DF (Lines of Bearing)
- Tactical Communications Exploitation
- OTM Electronic Attack
- Dismounted Operations

Tactical SIGINT for the 21st Century

Mission

Provide continuous, all weather, near-real-time direct support intelligence, force protection, tactical signals intelligence (SIGINT) electronic support (ES), and enhanced situational awareness to the tactical maneuver commanders. Prophet detects, collects and exploits full spectrum radio frequency (RF) emissions, and will perform measurement and signature intelligence (MASINT). A secondary mission will be electronic attack (EA) against selected enemy emitters to interrupt, spoof, disrupt and/or disable target command and control (C2) nodes.

Description and Specifications

Prophet is mounted on a High Mobility Multipurpose Wheeled Vehicle (HMMWV), with a quick-erect 7-meter antenna mast. The Prophet also has a dismounted man-pack version, which will support airborne insertion and early entry into the battlespace for intelligence support to a division, brigade, regiment, or task force. This intelligence support will provide indications and warning, location, tracking and identification of hostile forces/equipment, and will analyze data to determine probable enemy plans and intentions. The Prophet will cross-cue other battlefield sensors (e.g. tactical unmanned aerial vehicles, Future Combat System of Systems, Firefinder radars), as well as provide additional data that may confirm indications and detections from the other battlefield sensors.

When fielded, the Prophet will replace the current tactical SIGINT Legacy systems which include the AN/TSQ-138 TRAILBLAZER, the AN/TRQ-32 TEAMMATE, the AN/TLQ-17A TRAFFICJAM, and the AN/PRD-12 lightweight man-transportable radio direction finding set. The Prophet development and acquisition approach employs an open systems architecture, modular design, and nonproprietary industry standards. This approach will support evolutionary growth and expansion via circuit card assemblies and software versus wholesale hardware replacement. The Prophet system will be procured under a five-block acquisition approach, which will ensure standardization, reduced footprint, reduced logistics, smaller and lighter force structure, and improved mobility. As an Objective Force system, the Prophet will ensure overall information superiority for the forward area tactical commanders, when deployed and integrated into the maneuver units' networked sensor arrays to provide gap and seam coverage in the forward tactical areas.

Foreign Counterpart

The United Kingdom, Australia, Canada, and France either have or are actively pursuing a comparable vehicular system.

Foreign Military Sales

None

Program Status

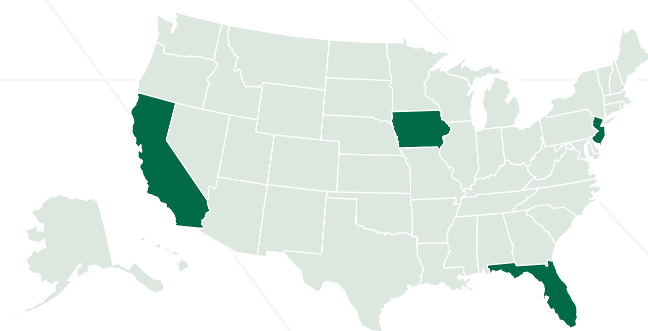
- **1QCY01** Completed Prophet engineering manufacturing development (EMD) (ES Block I) and Final Prophet ES IOT&E Report.
- **4QCY01** Fielded three Prophet EMD models to the 1st Interim Brigade Combat Team, Ft. Lewis.
- **19 July 2000** Updated Prophet ORD to provide detail for Block III, IV, and V requirements.
- **1QCY01** Milestone (MS) III/C Block I ES Full Rate Production decision approved entry to production phase.
- **2QCY01** Prophet production contract awarded.
- Staff updated draft Prophet ORD at HQ DA for AROC approval.

Projected Activities

- **3QCY02** Follow-On Test and Evaluation of production Prophet.
- **3QCY02** Follow Fielding first six Prophet production systems to 1st and 2nd IBCTs, Fort Lewis, WA.
- **3QCY02** Block II/III MS B decision to enter system development and demonstration (SDD).

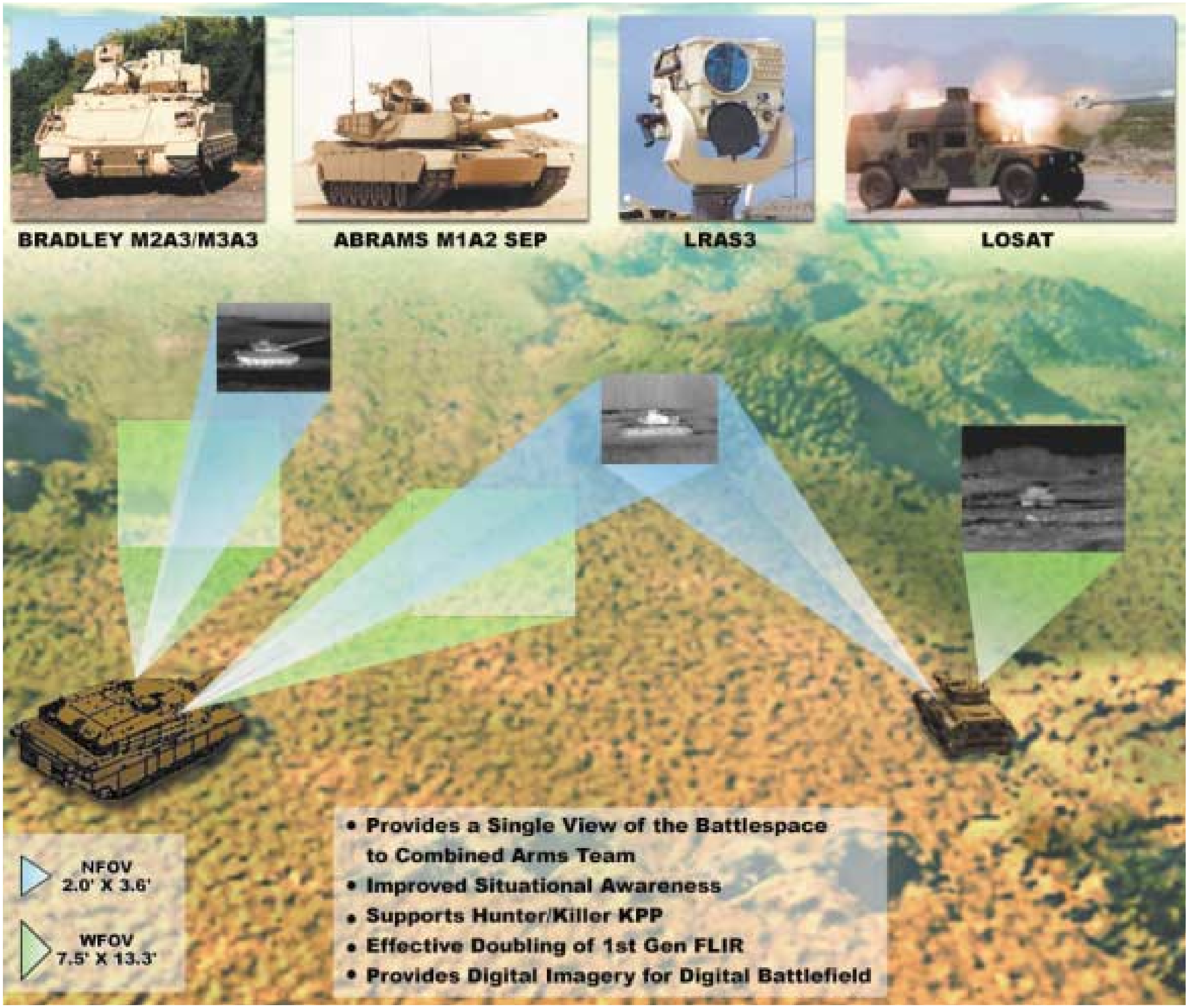
Prime Contractors

Prophet Block I, ES Production, Titan Systems (San Diego, CA; Melborne, FL)



See appendix for list of subcontractors

Second Generation Forward Looking Infrared (FLIR)



Second Generation Forward Looking Infrared (FLIR)

Mission

Provide the Army with advanced sensor systems capable of providing superior reconnaissance, surveillance and target acquisition capability and a common view of the battlefield during varied atmospheric and obscurant conditions.

Description and Specifications

Horizontal technology integration (HTI) second generation forward looking infrared (FLIR [SGF]) provides the M1A2 SEP Abrams Main Battle Tank, M2A3/M3A3 Bradley Fighting Vehicle, and Long Range Advanced Scout Surveillance System (LRAS3) and the Line-of-Sight Antitank (LOSAT) system with a leap-ahead target acquisition capability during all atmospheric and obscurant conditions, as well as the capability of seeing the same battlespace. HTI SGF is the Army's first major horizontal technology integration program. HTI SGF entails the insertion of a common second generation thermal sensor, known as the B-Kit, into the Army's highest priority ground-based platforms. One goal achieved through this program was the maximization of economies of scale during production and the minimization of life cycle costs. By integrating a common thermal sensor known as a B-Kit into any candidate platform, the user community is able to see the same battlefield and achieve a broad overmatch to potential adversary capabilities. The linkage between the B-Kit and the perspective sights are system-specific platform links called A-Kits.

The present system concept will allow adaptation of this common sensor to any new platform application desired by Army leadership. In addition, this system will provide a battlespace observation edge for U.S. forces well into the future. Commonality of FLIR sensors in multiple platforms facilitates development and fielding of future upgrades, such as image fusion, aided target recognizers, and target trackers.

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

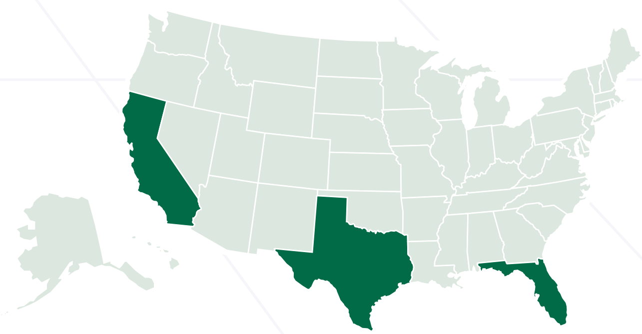
- **1QFY00** Successfully completed HTI SGF Milestone III.
- **2QFY00** Awarded HTI SGF full-rate production contract.
- **3QFY00** First unit equipped (FUE) (within M1A2 SEP).
- **1QFY01** FUE (within M2A3 BFV).
- **3QFY01** FUE (within LRAS3).
- **1QFY02** B-kit multi-year competitive contract awards.

Projected Activities

- **3QFY02** Thermal imaging system and binocular image control unit competitive awards.
- **FY05** Follow on B-kit, TIS, BICU, CITV procurements.

Prime Contractors

Raytheon (McKinney, TX); DRS Technology, Inc. (El Segundo, CA; Palm Bay, FL)



See appendix for list of subcontractors

Mission

Provide critical air surveillance of forward areas; automatically detect, track, classify, identify and report targets (cruise missiles, unmanned aerial vehicles, rotary and fixed wing aircraft) to air defense weapons systems.

Description and Specifications

The Sentinel is used with the Army's Forward Area Air Defense Command and Control (FAAD C2) system. The Sentinel accomplishes its primary mission by providing key target data to short range air defense (SHORAD) weapon systems and battlefield commanders via the FAAD C2 data link or directly from the Sentinel, using enhanced position location reporting system (EPLRS) or Single Channel Ground and Airborne Radio System (SINCGARS) data radios.

The Sentinel system consists of the High Mobility Multipurpose Wheeled Vehicle (HMMWV) group, the antenna transceiver group (ATG) mounted on a high mobility trailer, an identification friend-or-foe (IFF) system, and FAAD C2 interface. The sensor is an advanced three-dimensional battlefield X-band air defense phased-array radar with an acquisition range of 40 km.

The Sentinel is capable of operating both day and night, in adverse weather conditions, and in battlefield environments of dust, smoke, aerosols, and enemy countermeasures. It provides 360-degree azimuth coverage for acquisition and tracking. The Sentinel automatically detects, tracks, classifies, identifies, and reports targets, including cruise missiles, unmanned aerial vehicles, rotary-wing aircraft, and fixed-wing aircraft. It can identify targets moving at speeds from hovering to fast-moving and located at positions from nap of the earth to the maximum engagement altitude of SHORAD weapons. Accurate and rapid-reacting, Sentinel acquires targets sufficiently forward of the forward line of troops to improve air defense weapon reaction time and allow engagement at optimum ranges. The Sentinel's integrated IFF reduces the potential for fratricide of friendly aircraft. The Sentinel is transported by an M1097A1 HMMWV.

Sentinel modernization efforts fund enhanced target range and classification (ETRAC) upgrades to engage targets beyond visual; increase the detection and acquisition range of rotary wing, fixed wing, cruise missiles, and unmanned aerial vehicles by approximately 100 percent; enhance friendly force situational awareness; and classify cruise missiles and unmanned aerial vehicles. First unit equipped with ETRAC capabilities is scheduled for 4th quarter of FY03. This effort supports the Army Transformation process and will provide legacy and objective forces with improved capability against evolving threats.

Foreign Counterpart

Italy: Contraves LPD-20; Switzerland: Skyguard Improved; Russia: Hot Shot 2S6; Germany: Siemens DR-641; France: Rodeo, RA-20S and El Dorado.

Foreign Military Sales

Egypt, Turkey.

Program Status

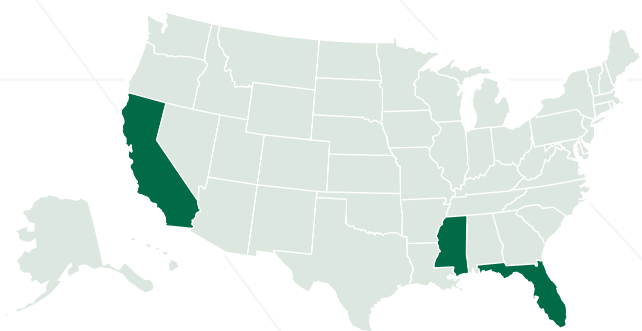
- In production and deployment phase.
- Completed fielding to Active Army Units except the 2nd LCR.
- **2QFY01** Awarded Full Rate Production Contract Number 6.
- **4QFY01** Fielded 2 Florida National Guard Battalions (1-265 ADA & 3-265 ADA).
- **2QFY02** Award ETRAC Phase 1A Production Contract.

Projected Activities

- **3QFY02** Complete Florida National Guard fielding (2-265 ADA).
- **3QFY02** Field 2nd LCR.
- **3QFY02** Award ETRAC Phase 1B Production Contract.
- **4QFY02** Field Ohio National Guard Battalion (2-174 ADA).
- **1QFY03** Contractor Delivery System Logistic and Maintenance Support Contract.
- **1QFY03** Field South Carolina National Guard Battalion (2-265 ADA).
- **2QFY03** Complete NMNG - 4 radars (4-200 ADA).

Prime Contractors

Thales Raytheon Systems (El Segundo, CA; Forest, MS; Largo, FL)



See appendix for list of subcontractors

Single Channel Ground and Airborne Radio System (SINCGARS)

Mission

Provide commanders with a highly reliable, secure, easily maintained Combat Net Radio (CNR) with voice and data handling capability, in support of command and control operations.

Description and Specifications

The Single Channel Ground and Airborne Radio System (SINCGARS), with its Internet controller, provides the communications link for the digitized force. SINCGARS configurations include manpack, vehicular (both low and high power), and airborne models. Communications Security (COMSEC) is integrated into currently produced versions of the ground and airborne radios. System Improvement Program (SIP) models provide upgrades to enhance operational capability in the Tactical Internet (TI) environment. The Advanced System Improvement Program (ASIP) models (of a reduced size and weight) provide further enhancements to operational capability in the TI environment.

ASIP dimensions:

Weight: 8.1 lbs

Height: 3.4 in

Length: 10 in

Width: 5.4 in

Foreign Counterpart

United Kingdom: Racal; France: Thomson CSF; Belgium: Marconi; Sweden: Ericsson.

Foreign Military Sales

Bahrain, Finland, Georgia, Greece, Hungary, Italy, Kuwait, Morocco, New Zealand, Saudi Arabia, SHAPE Tech Center (NATO), Spain, Special Defense Acquisition Fund (for FMS), Taiwan, Ukraine, and Uzbekistan.

Program Status

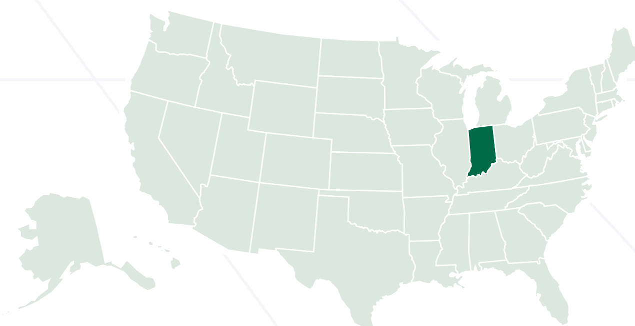
- **3QFY01** Program Year 15 production option awarded.
- The Army Acquisition Objective (AAO) is currently 242,480 ground and 9,248 airborne radios. A total of 229,778 ground and 9,204 airborne radios have been procured to date. Approximately 215,500 radios have been fielded.
- The FY03-FY07 President's Budget contains funding to complete fielding the ASIP model SINCGARS radios currently on contract and procure a portion of the assets required for Brigade Combat Teams (BCT).
- Development of an acquisition initiative to integrate Global Positioning System (GPS) into the ASIP radio was completed.

Projected Activities

- **2QFY02** Award production contract delivery orders for ground radios, airborne radios, and radio test sets.
- **3QFY02** Testing of the Integrated GPS into the ASIP radio.

Prime Contractors

International Telephone and Telegraph (ITT) (Fort Wayne, IN)



See appendix for list of subcontractors

Smoke Generator (M56 Coyote)

Smoke Generator (M56 Coyote)

Mission
Deny information to the enemy, protect our forces, and dominate the maneuver battle by generating large-area obscuration in the visual, infrared, and millimeter regions of the electromagnetic spectrum.

Description and Specifications
The Motorized Smoke Generator (M56) is a large-area smoke generator system mounted on the M1113 High Mobility Multipurpose Wheeled Vehicle (HMMWV). The M56 can obscure high-priority stationary targets such as airfields, bridges, and ammunition depots, as well as mobile targets such as convoys and troop movements. The system is modular and uses a gas turbine engine as a power source to disseminate the obscurants. The visual screening module is capable of vaporizing fog oil for up to 90 minutes. Dissemination of graphite is provided for 30 minutes to blind infrared sensors. A program to add obscuration capability in the millimeter wave region has been initiated.

Turbine engine-powered visual screening (fog oil): 0-1.33 gal/min

Infrared screening (graphite): 1-10 lbs/min

Millimeter wave screening: to be added in FY05

Foreign Counterpart
Countries that use former Soviet doctrine emphasize extensive use of obscurants during tactical exercises. Many nations, especially those in the Middle East, are beginning developmental programs in this area.

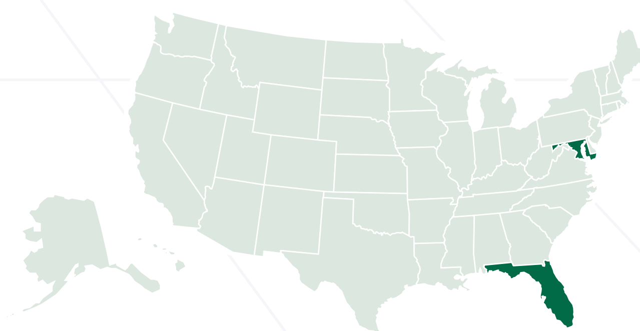
Foreign Military Sales
Taiwan.

Program Status
- **4QFY94** Type-classified M56 as standard.
- **FY95** Commenced production.
- **2QFY97** First unit equipped.
- **1QFY01** Initiated second major production effort for the M56 Smoke Generator System.
- **FY01** Initiated millimeter wave (mmw) obscurant preplanned product improvement development effort, to be followed by production and integration.
- **FY01** Initiated millimeter wave obscurant preplanned product improvement development effort, to be followed by production and integration.

Projected Activities
- **FY02** Commence retrofitting driver's vision enhancer to fielded systems.
- **FY02** Commence MMW research, development, test and evaluation (RDTE).
- **FY02** Complete M56 First Article Test and begin second production.

Prime Contractors
Production: General Dynamics Robotics Systems (Westminster, MD)

MMW RDTE: Titan System Corporation (Melbourne, FL)



See appendix for list of subcontractors

Stinger

Mission
Provide short-range air defense for brigade, division, and corps area combat units and critical assets against cruise missiles, unmanned aerial vehicles (UAVs), low-flying fixed-wing aircraft and helicopters.

Description and Specifications
The Stinger program has been restructured to support the Army Transformation strategy. Stinger, a fire-and-forget infrared/ultraviolet (IR/UV) missile system, is mounted on a variety of platforms and is the only air defense weapon in the forward area. Stinger has been fielded on MANPADS, Avenger, Kiowa Warrior (OH-58D), Special Operation Black Hawks (MH-60), Bradley Linebacker, and the U.S. Marine Corps' Light Amphibious Vehicle-Air Defense. This missile homes in on the heat emitted by fixed-wing aircraft, helicopters, and other targets. Stinger uses an eject motor to propel the missile a safe distance away from the gunner; a flight motor then ignites and propels it to the target. A proportional navigation system enables it to fly an intercept course to the target. The Stinger program has evolved from the Redeye, to Stinger Basic, followed by Stinger Post, to the Stinger Reprogrammable Microprocessor (Stinger-RMP). The Block I software and hardware changes to the Stinger-RMP missile provide a greatly improved capability to engage advanced cruise missile and UAV threats.

Guidance: Passive infrared and ultraviolet homing

Speed: Supersonic

Navigation: Proportional with lead bias

Weight: 34.5 lbs

Diameter: 2.75 in

Length: 60 in

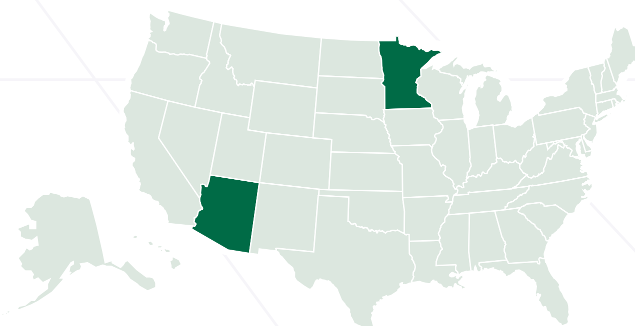
Foreign Counterpart
Britain: Blowpipe, Javelin; Russia: SA-7, SA-14, and SA-16; Sweden: RBS-70.

Foreign Military Sales
Denmark, Germany, Greece, Israel, Italy, The Netherlands, Pakistan, Portugal, Saudi Arabia, Sweden, Switzerland, Taiwan, Turkey, Egypt, and the United Kingdom.

Program Status
- New build Block I missile in production through FY10.

Projected Activities
- Continue to buy new STINGER Block I missiles to support the STINGER based SHORAD force.

Prime Contractors
Raytheon (Tucson, AZ)



See appendix for list of subcontractors

Mission

Perform 24-hour terrain surveillance, target acquisition, target location, and fire support mission execution in heavy and light divisions.

Description and Specifications

The Striker replaces the M981 fire support vehicles used by Combat Observation Lasing Teams (COLT) in heavy divisions and provides unprecedented fire support to light, airborne, and air assault divisions. It operates as an integral part of the brigade reconnaissance team, providing COLT and fire support mission planning and execution. The Striker provides precision strike capability by locating and designating targets for both ground and air delivered laser-guided ordnance and conventional munitions.

The Striker is built on a M1025A2 armored High Mobility Multipurpose Wheeled Vehicle (HMMWV). The Striker system includes: G/VLLD laser rangefinder and designator; AN/TAS-4B night sight; targeting station control panel; mission processor unit; handheld terminal unit; lightweight computer unit; hosts forward observer software; inertial navigation system; and Enhanced Precision Lightweight Global Positioning System Receiver (EPLGR).

Length: 15.92 ft

Width: 7.2 ft

Height: 8.5 ft

Weight: 10-102 lbs combat-loaded

Power train: 6.5 liter, V8, 160-hp diesel engine with Turbo Hydra-Matic 4L80-E four-speed automatic transmission

Cruising range: 320 mi

Road speed: 55 mph

Crew: 3

Vehicle armament: 5.56mm, M249 Squad Automatic Weapon

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

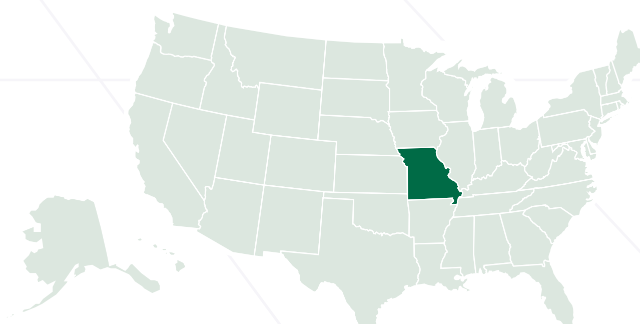
- **Current** In full rate production.
- **2QFY01** First unit equipped.

Projected Activities

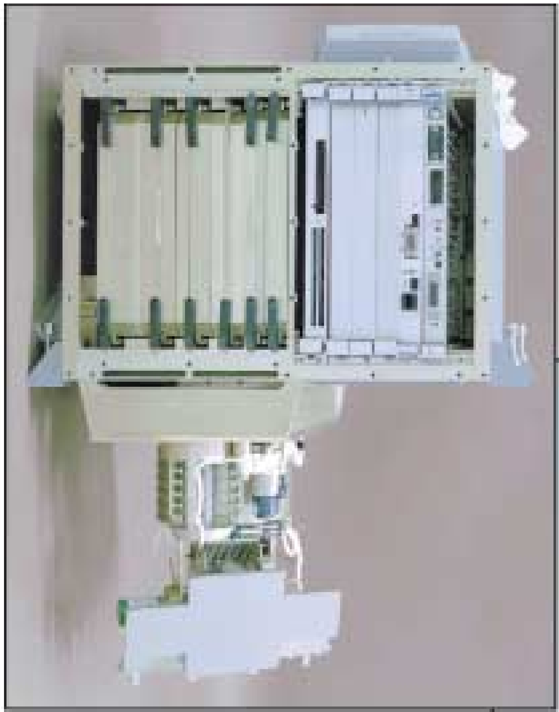
- Continue fielding.

Prime Contractors

Systems & Electronics, Inc. (St. Louis, MO)

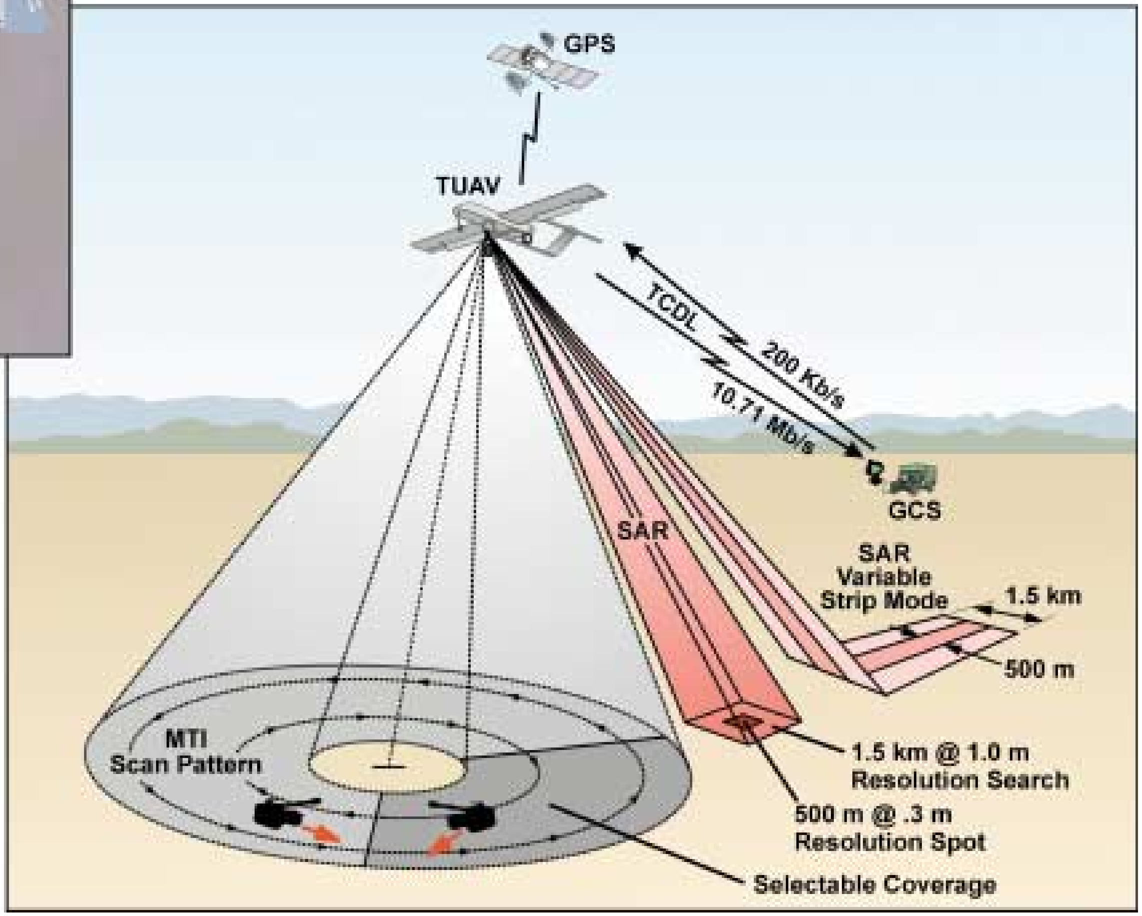


See appendix for list of subcontractors



SAR/MTI Performance

- All-weather operation
- High-resolution imagery (.3 m)
- Near real-time, image formed on board
- Strip map performance
- Spot mode performance
- Slant range 3-12 km
- Variable swath (500 m/1500 m)
- Variable resolution (.3-1 m)
- MTI scan coverage 360°
- SAR/MTI weight 63 lbs



Synthetic Aperture Radar/Moving Target Indicator (SAR/MTI)

Mission
Provide the Army's Tactical Unmanned Aerial Vehicle (TUAV) with continuous all-weather coverage of worldwide targets, enabling continuous reconnaissance, surveillance and target acquisition.

Description and Specifications
The Synthetic Aperture Radar/Moving Target Indicator (SAR/MTI) is an advanced payload for TUAV. It was developed under an advanced technology demonstration (ATD) and satisfies the need for long-dwell coverage and reconnaissance of small, mobile or fixed targets. The SAR/MTI sensor weighs 63 lbs and provides high quality 0.3-meter to 1-meter operator-selected variable resolution imagery. This payload performs aerial image formation processing and downlinks continuous high-quality strip map imagery (500-1500 m wide) for analysis and distribution to the user. MTI mode provides 360° coverage at 15 km for a 10 m2 target, moving at 2 m/sec nose on and 4 m/sec broadside, with a 0.75 probability of detection. MTI mode also has a sector scan capability with a full scan refresh time of 30 /sec.

SAR/MTI consists of two subsystems: The SAR/MTI payload and the ground control station (GCS) elements. The SAR/MTI payload consists of two line-replaceable units: the antenna and the receiver/transmitter/processor. The SAR system has three modes of operation. Mode 1 provides mapping parallel to the flight path, even during turns or along curved paths, minimizing gaps in the center of the image. Mode 2 is the classic strip map mode in which mapping occurs over a predetermined scene center irrespective of the aircraft's movement. Mode 3 is the variable resolution pseudo-spot mode in which a selected area is continuously mapped as the aircraft moves through the area. The SAR/MTI GCS elements provide the primary image display and diagnostics for the payload.

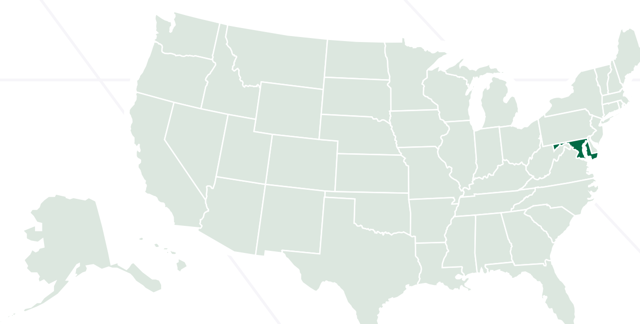
Foreign Counterpart
No known foreign counterpart

Foreign Military Sales
None

Program Status
- SDD phase.

Projected Activities
- SDD phase activities.

Prime Contractors
Northrop Grumman (Baltimore, MD)



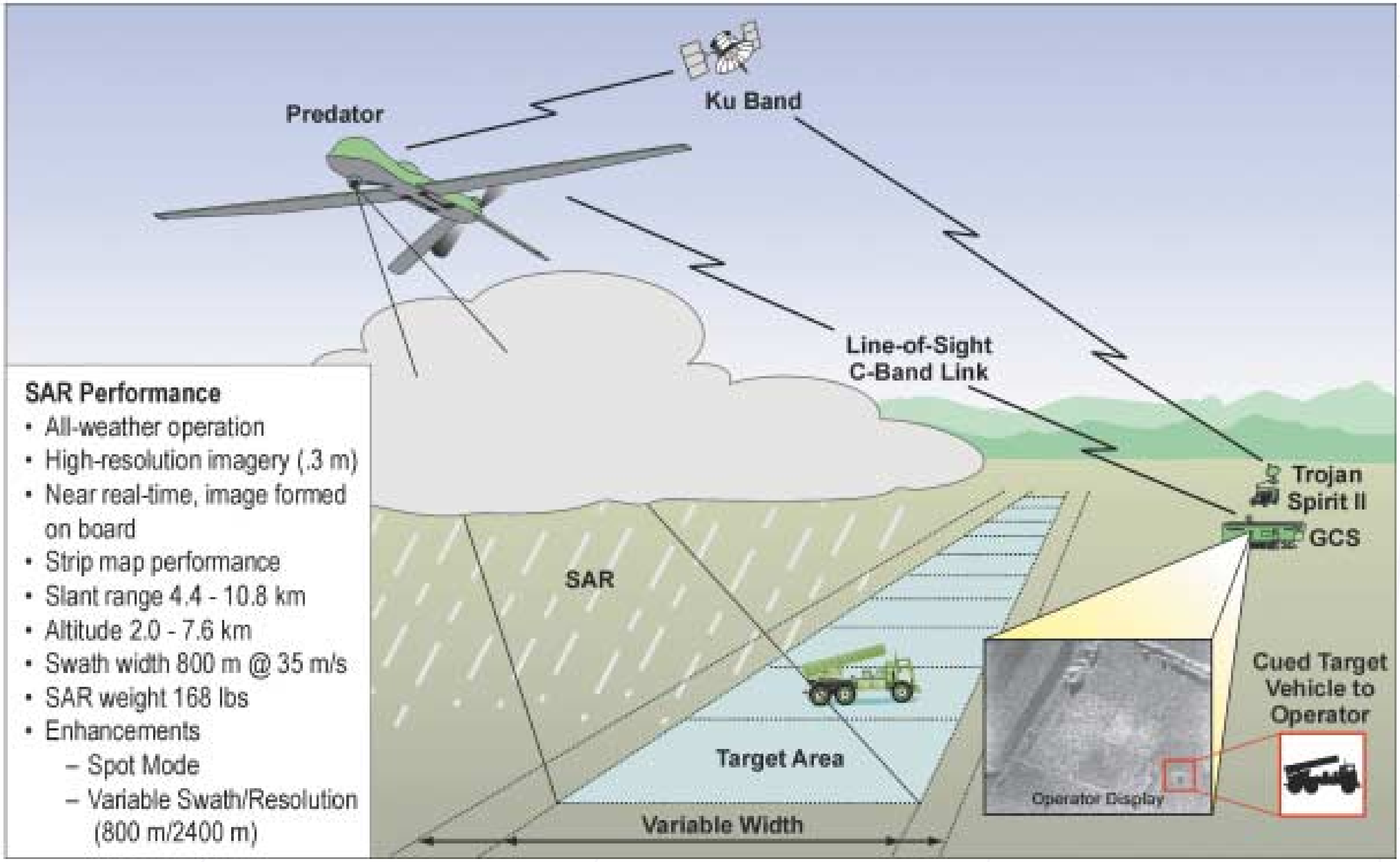
See appendix for list of subcontractors

Tactical Endurance Synthetic Aperture Radar (TESAR)

Receiver/Transmitter

Antenna

Processor



Tactical Endurance Synthetic Aperture Radar (TESAR)

Mission

Provide the Medium Altitude Endurance Unmanned Aerial Vehicle (MAE UAV) with continuous all-weather coverage of worldwide targets, enabling continuous reconnaissance, surveillance, and target acquisition.

Description and Specifications

The Tactical Endurance Synthetic Aperture Radar (TESAR) is crucial to the Office of the Secretary of Defense-sponsored MAE UAV advanced concept technology demonstration (ACTD) program. This ACTD quickly satisfied the need for long-dwell coverage and reconnaissance of small, mobile, or fixed targets. The program also developed concepts of operation for endurance UAVs. The TESAR sensor weighs 168 lbs and provides high quality 0.3-meter to 1-meter operator-selected variable resolution imagery. This payload performs aerial image formation processing and downlinks continuous high-quality strip map imagery (800m wide) for analysis and distribution to the user. Collected data is stored in the ground station, and selected images are disseminated via satellite link to various intelligence nodes.

TESAR consists of two subsystems: the Synthetic Aperture Radar (SAR) payload and the SAR ground control station (GCS) elements. The SAR payload consists of three line-replaceable units: the antenna, the receiver/transmitter, and the processor. The SAR system has three modes of operation. Mode 1 provides mapping parallel to the flight path, even during turns or along curved paths, minimizing gaps in the center of the image. Mode 2 is the classic strip map mode: Mapping occurs over a predetermined scene center irrespective of the aircraft's movement. Mode 3 is the variable resolution pseudo-spot mode: a selected area is continuously mapped as the aircraft moves through the area.

High reliability, modular design, and comprehensive built-in diagnostic capability enable simplified maintenance and support. The TESAR GCS elements provide the primary image display and diagnostics for the SAR payload. TESAR's GCS consists of a single rack assembly, featuring a graphics server, a high-resolution color monitor, a power control panel, and other peripherals. This assembly also interfaces from the wide-band satellite to the data link.

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

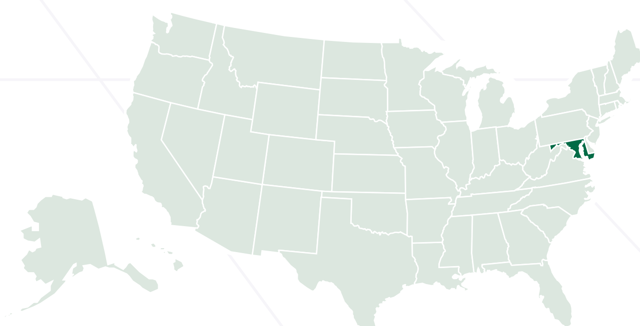
- Delivered 54 production SAR systems, 5 sets of SAR spares, 10 SAR ground control workstations, and 4 sets of SAR workstations spares.

Projected Activities

- Contract delivery pending on nine SAR systems.
- Develop Radar Display Application software for GCS.
- Continue deliveries of production SAR systems.
- Undertake future enhancements including Power PC upgrades and ruggedized PC ground support equipment.

Prime Contractors

Northrop Grumman (Baltimore, MD)



See appendix for list of subcontractors

Tactical Exploitation System (TES)

Mission

Serve as an interface between national systems and in-theater tactical forces, as well as receive data from selected theater sensor systems.

Description and Specifications

The Tactical Exploitation System (TES) is the Army's system for the 21st century. It will replace the advanced electronic processing and dissemination system (AEPDS), enhanced tactical radar correlator (ETRAC) and the modernized imagery exploitation system (MIES). The system combines existing capabilities of these into a single, integrated, scalable system designed for split-based operations. TES interfaces with numerous satellite and aircraft tactical sensors and processes/exploits their data, imagery, and information. TES is deployed in three primary configurations: TES Main, TES Forward, and the Distributive TES (DTES).

TES Forward is a highly mobile, High Mobility Multipurpose Wheeled Vehicle (HMMWV)-based element configuration; TES Main is housed in family of medium tactical vehicle (FMTV) M1085 cargo trucks. Each element has similar operational, communications, and support capabilities. The DTES is packaged in two HMMWV shelters to allow an early entry capability via C-130 transport.

TES is designed to provide the commander maximum flexibility to satisfy intelligence needs in a wide range of operational scenarios. TES provides multiple configurations, ranging from one C-130-deployable HMMWV early-entry capability to co-located main and forward elements with up to 40 operator workstations. TES operators can perform any imagery intelligence (IMINT), signal intelligence (SIGINT), cross-intelligence, or dissemination function from any system workstation. TES provides quick setup/tear-down and C-130 drive-on/drive-off capability to support rapid deployment.

The TES system is a key part of the emerging distributed common ground station-Army (DCGS-A) architecture.

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

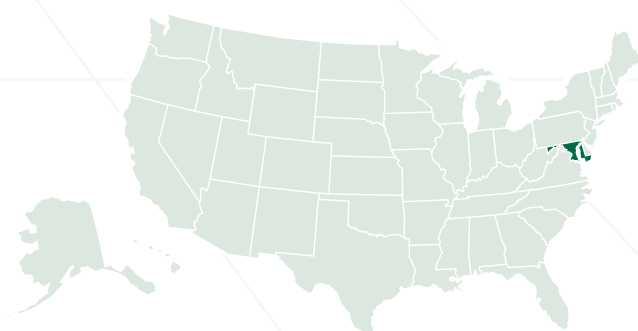
- **1QFY01** Completed fielding of TES Main #1 to XVIII Airborne Corps.
- **3QFY01** TES Forward #1 participated in Fleet Battle Experiment India.
- **4QFY01** Fielded TES Main #3 (IOC) to 513th Military Intelligence Brigade. System will be operational 2QFY02.
- **1QFY02** Fielding of TES Main #2 to V Corps completed.
- **1QFY02** Fielded TES Forward #2 to V Corps. System will be operational 2QFY02.

Projected Activities

- **2QFY02** Award TES Objective Acquisition contract for 1 TES Forward, 1 TES Main.
- **3QFY02** Field TES Forward #3 to 513th Military Intelligence Brigade.
- **1QFY03** Field TES Forward #4 to Ft. Hood.

Prime Contractors

Northrop Grumman (Linthicum, MD)



See appendix for list of subcontractors

Tactical Operations Center (TOCs)

Tactical Operations Center (TOCs)

Mission
Develop and field operationally effective, affordable and supportable integrated, digitized Tactical Operations Centers (TOCs) that meet the functional information requirements of commanders and staffs at all echelons of command, from Battalion to echelons above corps.

Description and Specifications
The TOCs program integrates Army Battle Command Systems (ABCS), communications equipment, and local area networks (LANs) into standard Army platforms (vehicles and shelters), and tents. TOCs are digitized, tactically mobile, and fully integrated. Military off-the-shelf, non-developmental items, commercial off-the-shelf, and emerging technologies are incorporated into Department of the Army (DA)-approved system architectures. The TOCs are Defense Information Infrastructure/Common Operating Environment (DII/COE) and Joint Technical Architecture (JTA) compliant. The TOCs program also provides the commander and his staff with a digitized command information center (CIC), where information is exchanged, displayed, and fused, and where courses of action become orders.

TOCs are interoperable across all Army mission areas and joint/allied command and control nodes, and provide a common operational picture to the warfighter. TOCs are also modular and provide a "jump," or split-based, operations capability. Operations are revolutionized through a combination of state-of-the-art data processing, communications and information transport methods, using the Tactical Internet and the latest networking capabilities. Information dominance is achieved through the orderly evolution of capabilities demonstrated during advanced warfighting experiments. These include collaborative planning, improved large screen displays, new data radios and the Tactical Internet.

Foreign Counterpart
No known foreign counterpart

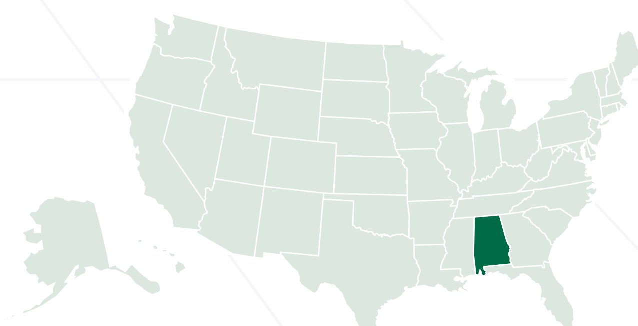
Foreign Military Sales
None

Program Status
- **2QFY97** Established TOCs program.
- **1QFY00** First TOC delivered to the 4th Infantry Division (First Digitized Division).
- **1QFY01** Completed fielding of digitized TOCs to the 4th Infantry Division.
- **1QFY01** Competitively awarded a TOC integration contract for Interim Brigade Combat Team (IBCT)-1 and 2.
- **3QFY01** Completed fielding of a mobility module G6 to the Third U.S. Army.
- **3QFY01** Completed fielding of digitized TOCs to IBCT-1.

Projected Activities
- **FY02** Begin fielding to 1st Cavalry Division (Second Digitized Division).
- **FY02** Complete fielding to IBCT-2.
- **FY03** Complete fielding to 1st Cavalry Division.
- **FY04-06** Complete fielding to III Corps, 3rd Brigade 4ID, and 3rd Armored Cavalry Regiment.

Prime Contractors
First and Second Digitized Divisions: General Dynamics Defense Systems (Huntsville, AL)

Interim Brigade Combat Teams: TRW (Huntsville, AL)



See appendix for list of subcontractors

Tactical Unmanned Aerial Vehicle (TUAV)

Mission

Provide reconnaissance, surveillance, and target acquisition (RSTA) to U.S. Army brigades and regiments in environments where real-time information feedback is needed, but manned aircraft are unavailable, or conditions make use of manned aircraft imprudent.

Description and Specifications

The Tactical Unmanned Aerial Vehicle (TUAV) has an initial range of 50 km, day or night, in limited adverse weather conditions, with a future, objective range extending to 200 km. The TUAV system consists of two ground control stations, one portable ground control station (GCS), one portable ground data terminal, four remote video terminals (RVTs), a minimum of three air vehicles (AVs), modular mission payloads, and launch and recovery equipment.

The GCS collects, processes, analyzes, and distributes digitized battlefield information by interfacing with present and planned service command, control, communications, computers and intelligence (C4I) systems. Flight and mission commands are sent to the AVs from the GCS. RSTA imagery and AV position data are downlinked directly to the GCS or RVTs located in tactical operations centers of the brigade, its subordinate battalions, and/or the direct support artillery or supporting aviation units. The complete TUAV system is transportable by two C-130 aircraft. Mission capability will be enhanced as advanced mission payloads become available, maximizing battlefield digitization to increase the effectiveness of other weapon systems.

Foreign Counterpart

Several of our allies are operating systems of a similar class, namely the United Kingdom (Phoenix), Israel (Searcher and Searcher II), France (Fox AT) and Sweden (Ugglan). Denmark, Belgium, and the United Kingdom are developing requirements or acquiring systems in the TUAV class. Open literature suggests that many countries have some type of system, but most are experimental.

Foreign Military Sales

None

Program Status

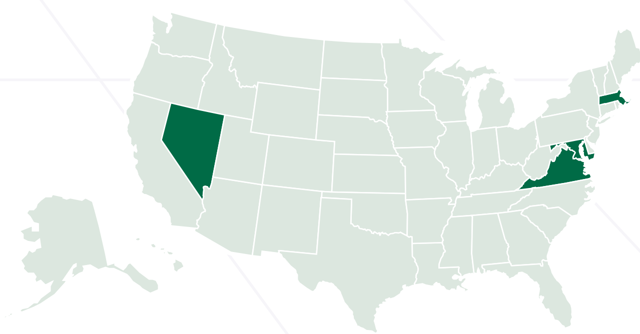
- The Shadow 200 TUAV has completed a lengthy and successful developmental phase in preparation for its initial operational test and evaluation (IOTE) scheduled for 3QFY02. During this developmental phase, the system completed two operational tempo demonstrations to prove its capability to meet the Army's time-on-station requirement. One of these demonstrations was held at Ft. Huachuca, Arizona in February 2001 and conducted by the contractor, AAI Corporation. The second was conducted entirely by soldiers at Ft. Hood, Texas. In both demonstrations, the Shadow performed very well and exceeded the requirement for total duration.
- A Hunter UAV system is being used as a TUAV surrogate in the Interim Brigade Combat Teams (IBCT) until the TUAV can be fielded. Its configuration has been modified to mirror the TUAV.
- The TUAV acquisition strategy has been modified to accelerate the program to deliver the system to the field in support of the Army's Transformation.
- The first low-rate initial production (LRIP) systems were delivered to the Army beginning in November 2000. The Army awarded a second LRIP in 2001 for delivery in early 2002. The Army expects to award a full-rate production contract by the 4th quarter 2002.
- The Hunter UAV is at the Joint Readiness Training Center, the U.S. Army Training and Doctrine Command schoolhouse, the 504th Military Intelligence Brigade/III Corps, and at Ft. Lewis with the IBCTs, until the TUAV is fielded. The Hunter is being used to support the continued development of UAV tactics, techniques, and procedures; concept of operations; and light-force UAV spiral development and experimentation. The Hunter will also continue to support Army missions anywhere in the world as needed.

Projected Activities

- **FY02** Initial operational test and evaluation; Milestone III Decision.
- **FY03** Full-rate Production; Initial operational capability.

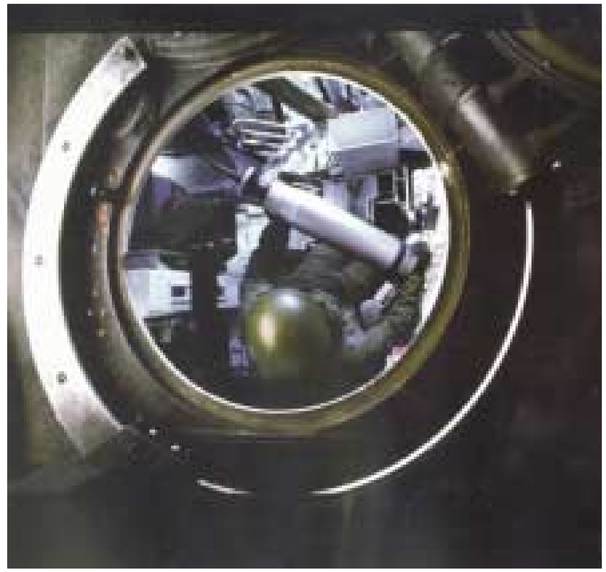
Prime Contractors

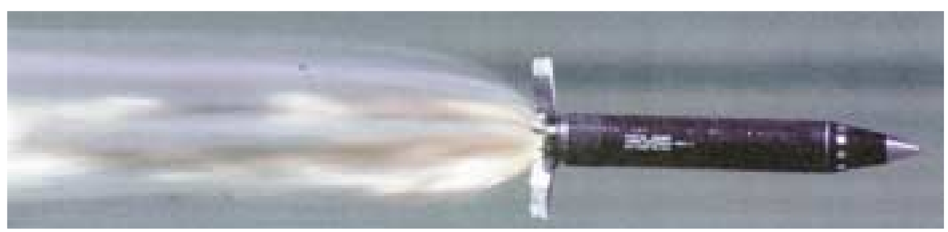
AAI Corporation (Hunt Valley, MD)



See appendix for list of subcontractors

Tank Main Gun Ammunition





Tank Main Gun Ammunition

Mission

Provide the U.S. Army with world-class, direct-fire, tank main gun ammunition for use in ground combat weapons platforms (M1A1/M1A2 Abrams Main Battle Tanks).

Description and Specifications

The 120mm family of tank ammunition is the most advanced and lethal tank ammunition in the world. The M256 cannon on the M1A1 and M1A2 Abrams tanks fires two primary types of ammunition: kinetic energy (KE) ammunition, used to defeat the heavy frontal armor of main battle tanks; and multipurpose (MP) ammunition, used against more lightly armored vehicles, helicopters, buildings, bunkers and other emplacements.

KE ammunition lethality is optimized by firing a maximum-weight projectile at the greatest velocity possible. The 120mm-series of KE ammunition (M829A1, M829A2 and M829E3) use penetrators of increased mass and length, lighter sabots, and more energetic propellants. Two key components of U.S. KE cartridges are extremely dense depleted uranium penetrators that provide excellent armor penetrating capabilities and lightweight aluminum or graphite composite sabots.

Multi-purpose ammunition uses a high-explosive, shaped-charge warhead to provide blast, armor penetration, and fragmentation effects. The M830A1 multipurpose, anti-tank (MPAT) cartridge's sub-caliber, discarding sabot projectile gives it higher velocity, decreased drag, and increased accuracy over the M830 cartridge. Its fuze includes a selectable proximity sensor to provide an anti-helicopter capability. The XM1002 MPAT trainer will simulate the M830A1 configuration and ballistics. The XM908 high explosive, obstacle-reduction cartridge reduces large concrete obstacles, buildings, bunkers and light armor. It is identical to the M830A1 except that the fuze and proximity sensor are replaced with a steel nose. Fielding for the XM908 has been limited to U.S. Forces in Korea.

Two other potential 120mm cartridges include a long-range kinetic energy (LRKE) tactical trainer to replicate high-performance KE cartridges in training and the XM1028 canister cartridge to provide an anti-personnel capability at short ranges with initial fielding to Korea.

Foreign Counterpart

NATO tanks employ KE and MP ammunition, but only France and the United Kingdom use depleted uranium penetrators. No NATO countries use tank ammunition with composite sabots or proximity switches. TERM has no counterpart worldwide.

Foreign Military Sales

M829: Kuwait, Saudi Arabia; M830: Kuwait, Egypt; KEW A1: Egypt.

Program Status

- **M829A1**, **M829A2**, **M830**, **M830A1** and **M908:** Fielded.
- **M829E3:** In final development; transitions to production in FY02.
- **XM1002 MPAT Trainer:** In development.

Projected Activities

- **XM908:** Complete fielding to Korea in FY02.
- **M829E3:** Begin low-rate initial production in FY02.
- **XM1028:** Begin development in FY02/FY03.
- **XM1002:** Achieve type classification and low-rate production in 3QFY03.
- **LRKE:** Currently unfunded.

Prime Contractors

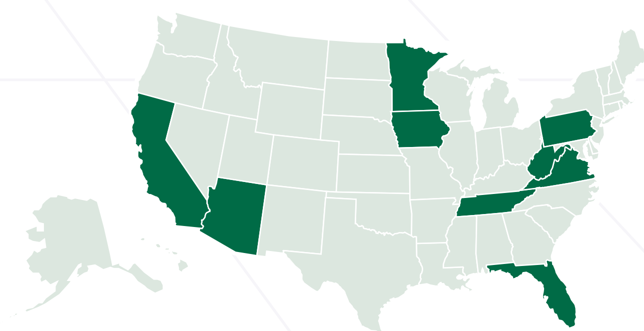
M830A1 and XM1002: Alliant Techsystems (New Brighton, MN)

XM908: General Dynamics-Ordnance and Tactical Systems (St. Petersburg, FL)

M829E3: Alliant Techsystems (Plymouth, MN)

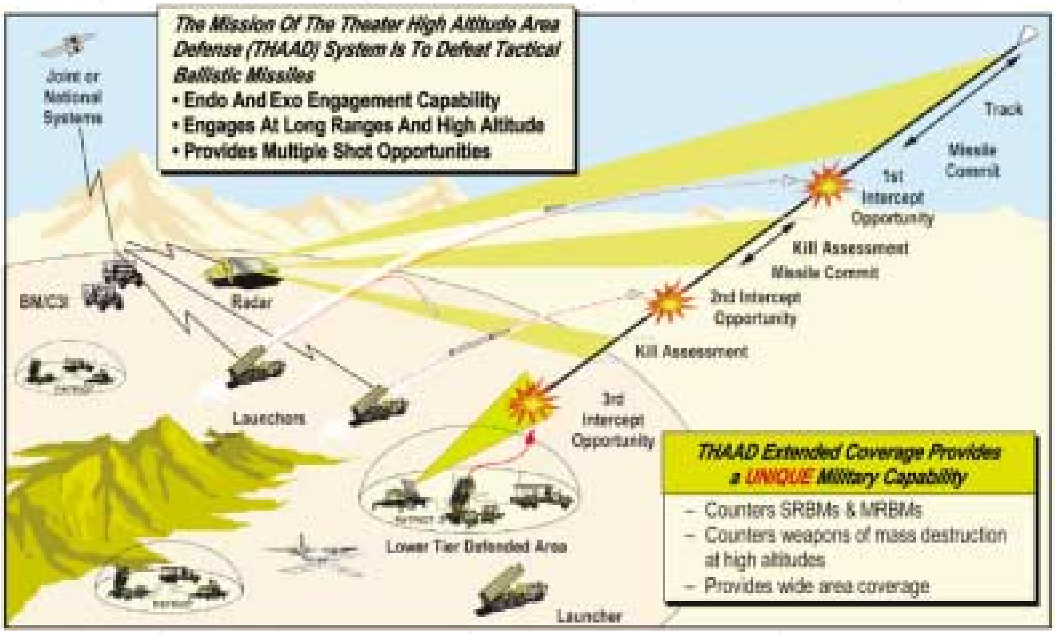
TERM-KE: Alliant Techsystems (Clearwater, FL)

TERM-CE: Raytheon (Tucson, AZ)



See appendix for list of subcontractors

Theater High Altitude Area Defense (THAAD) System



Theater High Altitude Area Defense (THAAD) System

Mission

Provide theater-wide area defense of tactical ballistic missile (TBM) threats—including weapons of mass destruction—operating in the endo- and exo-atmosphere and directed against military forces and strategic geopolitical assets.

Description and Specifications

The Theater High Altitude Area Defense (THAAD) system is a theater missile defense (TMD) weapon system designed to intercept short- and medium-range missile threats that will employ increasingly sophisticated warhead technologies. The THAAD system will augment existing and other planned TMD capabilities by engaging threat missiles at higher altitudes and at longer ranges. This intercept capability negates the use of weapons of mass destruction. THAAD's hit-to-kill guidance approach provides a high degree of lethality compared to existing systems with fragmentation warheads.

The THAAD system consists of missiles; launchers; battle management/command, control, communication, computers, and intelligence (BM/C4I) elements; radars; and support equipment. The missile is a hypervelocity, single-stage, solid propellant booster with a unique endo-/exo-atmospheric kill vehicle (KV). The hit-to-kill technology KV, designed to destroy threat warheads, guides to the target using an infrared homing seeker. The launcher uses the Army standard palletized load system (PLS) 16-ton truck with a capacity of at least eight missile rounds on a missile pack. The High Mobility Multipurpose Wheeled Vehicle (HMMWV)-based BM/C4I centers will coordinate with the theater air defense command and control system and will control both the engagement and force operations for THAAD.

The BM/C4I will provide automated acquisition and identification of TBM threats, process and disseminate track data, assign weapons, monitor engagements, and guide sensor operations. The THAAD X-band phased-array radar acquires the target at long ranges tracks it, and provides in-flight updates to the THAAD interceptor prior to intercept. The radar also performs kill assessment to support the decision to commit additional interceptors or to cue lower tier systems such as the PATRIOT system. The THAAD system will support passive defense and attack operations by providing impact-point predictions and launch point estimations. The THAAD system will be fully transportable by C141/C5/C17 military aircraft. Once in theater, the system will use Army standard movers to be highly mobile on highways and unimproved roads. These system capabilities will enable THAAD to be rapidly deployed to any theater on short notice.

Foreign Counterpart

France and Italy: SAAM, SAMP/N, SAMP/T. Germany: MSAM.

Foreign Military Sales

None

Program Status

- Eleven flight tests were flown during program definition and risk reduction with the last two tests being successful intercepts.
- **June 23, 2000** Received program Milestone II approval.
- **August 4, 2000** Began engineering, manufacturing, and development contract.
- **September 27, 2001** The U.S. Government & Industry Team developing the THAAD system achieved a major milestone by successfully completing the critical design review (CDR) for the radar segment.
- **October 1, 2001** THAAD Project Office was placed under operational control (OPCON) of the Ballistic Missile Defense Organization.

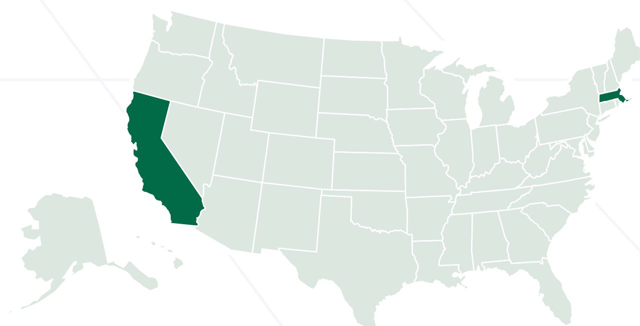
Projected Activities

- The program will continue to develop and conduct extensive ground tests and risk mitigation efforts to maintain a low risk program.
- **3QFY02** System preliminary design review.

Prime Contractors

THAAD System: Lockheed Martin (Sunnyvale, CA)

THAAD Radar: Raytheon (Bedford, MA) (As of FY98, Raytheon has been a prime sub to Lockheed Martin)



See appendix for list of subcontractors

Thermal Weapon Sight (TWS)

Thermal Weapon Sight (TWS)

Mission
Provide the U.S. Army infantry with the ability to detect and engage targets day or night during clear or degraded visual conditions caused by smoke, fog, or dust.

Description and Specifications
The AN/PAS-13 Thermal Weapon Sight (TWS) enables individual and crew-served weapon gunners to see deep into the battlefield increases surveillance and target acquisition range and penetrates obscurants, day or night.

The TWS family represents a substantial improvement over the image-intensifier night sights currently in use for small arms. TWS, a second-generation forward looking infrared (FLIR), is digital-battlefield compatible, and provides a standard video output for training, image transfer, or remote viewing. The TWS Modular Ballistic Solution (TWS-MBS) will incorporate a laser rangefinder, digital compass, and automatic aimpoint adjustment for improved performance of the M2 heavy machine gun and MK19 grenade machine gun. TWS is in full-rate production.

TWS Family	Range	Weight	Field of View	Weapons Supported
Light TWS	550m	3.0 lbs	15°	M16, M4, M203, M136
Medium TWS	1100m	4.5 lbs	6° and 18°	M249, M60, M240B
Heavy TWS	2200m	5.0 lbs	3° and 9°	M2, MK19, M24,M16 Squad Ldr

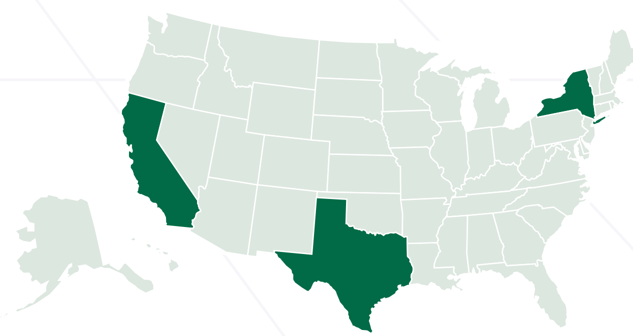
Foreign Counterpart
Czech Republic, Thailand

Foreign Military Sales
None

Program Status
- Completed TWS limited production.
- Completing TWS “Bridge” production.
- Thermal Omnibus currently in full-rate production.
- **2QFY01** Final operational test and evaluation Bridge and Thermal Omnibus designs.
- **1QFY02** LTWS - Initial operational test and evaluation scheduled.

Projected Activities
- **4QFY02** Operational Test to qualify second sources (BAE, Nytech).
- **2QFY03** LTWS.
- **2QFY03** Thermal Omnibus II Award.
- **2QFY03** First unit equipped LTWS.

Prime Contractors
Raytheon (Dallas, TX)



See appendix for list of subcontractors

TOW Improved Target Acquisition System (ITAS)

TOW Improved Target Acquisition System (ITAS)

Mission

Defeat threat armored vehicles and urban enclosed threats at extended ranges in all expected battlefield conditions; ensure combat overmatch and dominance at every point on the spectrum of operations. Provide the commander with reconnaissance, surveillance, and target acquisition capabilities integral to developing superior situational awareness, target detection, recognition and identification.

Description and Specifications

The TOW (tube-launched, optically-tracked, wire-command-link guided) Improved Target Acquisition System (ITAS) is a weapon system critical to the Legacy, Interim, and Objective Forces. ITAS is a significant product upgrade to the light infantry's existing M220A2 TOW 2 guided missile launcher . With its second-generation infrared sensor technology, ITAS provides gunners with more than double the target detection, recognition and identification range of their present TOW 2 day and night sights.

ITAS has an improved design that greatly reduces the TOW 2's 18 system components to six. Built-in test equipment eliminates the need for organizational and direct support maintenance test equipment by isolating faults to the component level. ITAS features an improved man-machine interface that greatly improves target engagement performance by providing the gunner a single display for viewing both the day and night sight.

ITAS will be fielded at battalion level, replacing TOW 2 in light infantry units. The ITAS modification kit consists of an integrated target acquisition subsystem (TAS) (day/night sight with an eye-safe laser rangefinder; aided target tracker and elevation brake), fire control subsystem (FCS) that contains the electronic circuits necessary for tracking targets, missile guidance, and embedded training; a high-endurance battery power source (BPS); and a modified TOW 2 Traversing Unit (TU) that provides hand grips instead of TOW 2 control knobs. The unit's existing TOW 2 tripod and launch tube are retained. The ITAS will operate from the High Mobility Multipurpose Wheeled Vehicle (HMMWV) in the dismounted tripod configuration. A modified version of the ITAS is being integrated into the Interim Armored Vehicle (IAV) anti-tank guided missile (ATGM) variant.

Foreign Counterpart

No known direct foreign counterpart. The Hughes Aircraft Company, Spanish-assembled, Light Weight Launcher (LWL) is a somewhat similar but less capable system.

Foreign Military Sales

Canada - 2 systems with an expected additional 75 TAS/FCS sets in FY02

NATO Maintenance and Supply Agency - 1 system

Program Status

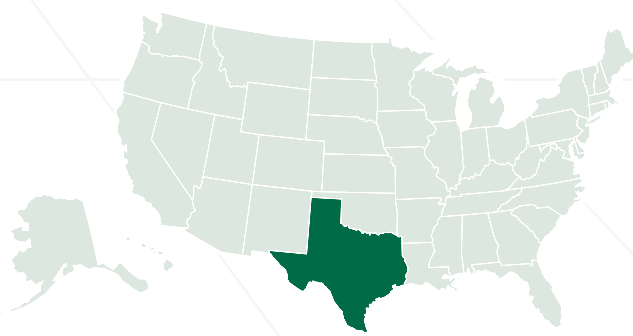
- **4QFY98** First Unit Equipped (FUE) completed to A Troop, 1-17th Cavalry, 82nd Airborne Division.
- **2QFY99** Limited User Test (LUT) II successfully completed.
- **June 2, 1999** Milestone III decision to enter full-rate production (FRP).
- **July 2, 1999** FRP contract awarded for 102 systems and included priced annual options for FY00-03.
- **1-2QFY00** Initial operational capability (IOC) completed to 3rd Brigade, 82nd Airborne Division.
- **3QFY00** Contractor logistics support (CLS) contract signed.
- **3QFY01** Life of system contractor logistics support (CLS) concept approved by the Deputy Assistant Secretary of the Army (Logistics).
- **3-4QFY01** Fielded to 2nd Brigade, 82nd Airborne Division.
- **4QFY01** Awarded production proveout contract for basic skill trainer (BST).
- **4QFY01-1QFY02** & **4QFY02** Fielding to 1st Brigade, 82nd Airborne Division.
- **1QFY02** Follow-on five-year contractor logistics support (CLS) contract award.

Projected Activities

- **2QFY02** Fielding to C/52nd Infantry as an ATGM IAV ILO.
- **4QFY02** Fielding to 2nd Infantry Division.

Prime Contractors

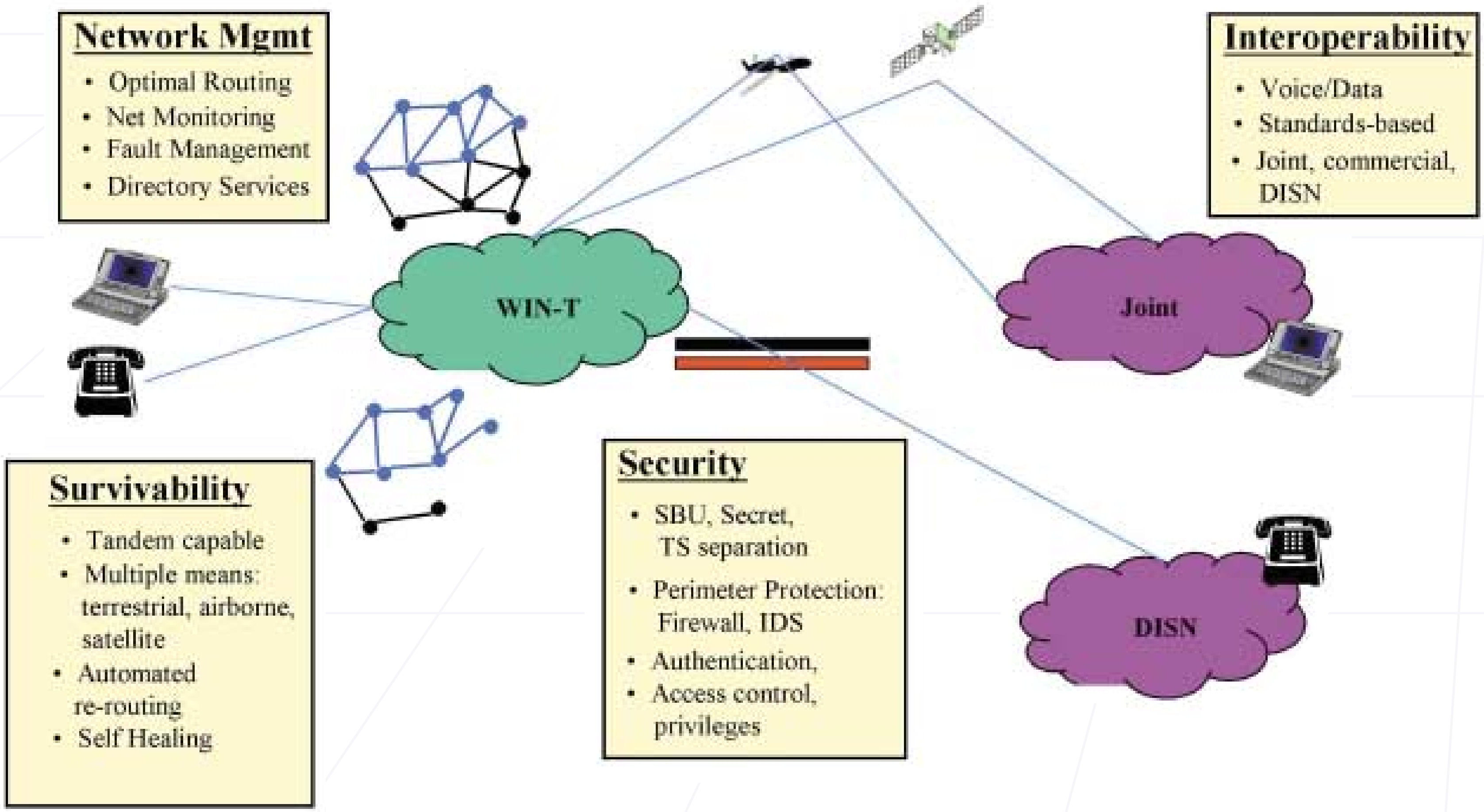
Raytheon (McKinney, TX)



See appendix for list of subcontractors

Warfighter Information Network–Tactical (WIN-T) New Start

WIN-T is a communications system, integral to the *Objective Force*, that will provide advanced commercial-based *networking* capability for the Warfighter.



Warfighter Information Network–Tactical (WIN-T) New Start

Mission
Provide advanced commercial-based networking capability to the Objective Force.

Description and Specifications
The Warfighter Information Network-Tactical (WIN-T) New Start is the Objective Force communications network that provides reliable, secure, and seamless information flow that enables decisive combat actions. WIN-T is the Army's portion of the Global Information Grid. It is a single integrating communications framework that fuses together through a standard infrastructure tactical command, control, communications, computers, intelligence, surveillance and reconnaissance systems for the Objective Force. WIN-T provides a seamless architecture that increases global access, significantly reduces the system footprint, provides increased data capacity, and supports Mobile Battle Command operations. WIN-T will have the following attributes: modular, scalable, Joint Technical Architecture-Army compliant, and commercial-standards based.

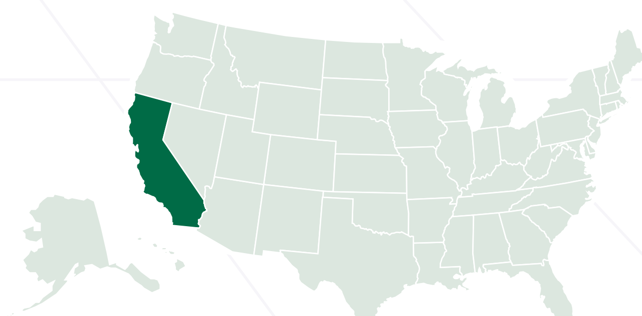
Foreign Counterpart
No known foreign counterpart

Foreign Military Sales
None

Program Status
- **2QFY00** Training and Doctrine Command approved the WIN-T Operational Requirements Document (ORD).
- **1QFY01** Joint Requirements Oversight Council ORD approval.
- **2QFY02** Request for Proposal (RFP) issued to industry.

Projected Activities
- **3QFY02** Milestone B approval.
- **3QFY02** System Integration and Demonstration (SID) contract award.
- **3QFY03** Preliminary Design Review.
- **2QFY04** Early User Test and Experimentation (EUT&E).
- **4QFY04** Milestone C Approval.
- **1QFY05** Production contract award.
- **2QFY07** Initial Operational Test and Evaluation (IOT&E).
- **3QFY07** First Unit Equipped.
- **1QFY08** Full Rate Production.

Prime Contractors
TRW (Carson, CA)



See appendix for list of subcontractors

Wolverine

Mission
Provide the heavy brigade combat team a military-load-class (MLC) 70-ton, in-stride, gap-crossing capability of up to 24 meters with similar mobility, survivability, sustainability, and supportability as the maneuver force.

Description and Specifications
A Division Capstone Exercise (DCX) veteran, the fully digitized Wolverine Heavy Assault Bridge is mounted on a M1A2 Abrams SEP chassis. It is operated by a two-man crew (MOS 12B) within A&O Platoons of Combat Engineer Battalions. The bridge is 26 meters long and can span gaps up to 24 meters under fire. It supports a 70-ton crossing at 16 kph. The bridge is launched from under armor in five minutes and retrieved in less than 10 minutes.

A critical force modernization item for the engineer regiment, the Wolverine enables the massing of combat power by allowing units to rapidly transit tank ditches, road craters, and partially damaged bridge sections as they maneuver. This maneuver enabler increases the assault force's survivability by reducing the time spent in vulnerable chokepoints and obstacles. The Wolverine replaces the obsolete Armored Vehicle Launched Bridge (AVLB) on a one-for-one basis. To date, 43 systems have been procured of the 55 systems funded through FY03.

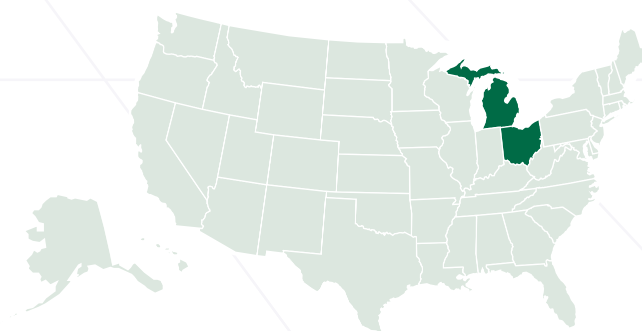
Foreign Counterpart
China: Type 84; France: AMX (AVLB); Germany: BLG-60, Biber, Leguan Bridge on Leopard I; Russia: MTU-20, MTU-72; Slovakia: MT-55; South Korea: M60A1 AVLB (no K1-based vehicle); United Kingdom: Chieftain.

Foreign Military Sales
None

Program Status
- **3QFY98** Awarded low-rate initial production (LRIP) contract.
- **4QFY99** Delivered first vehicle.
- **4QFY99-00** Conducted developmental and live fire testing.
- **1QFY00** Completed extended logistics review.
- **3QFY00** Conducted limited user testing.
- **2QFY01** Fielded 12 LRIP vehicles to the First Digitized Division.
- **2Q-3QFY01** First unit equipped & Division Capstone Exercise, 4th Infantry Division.
- **1Q-2QFY02** Production verification RAM test.

Projected Activities
- **2Q-3QFY02** Wolverine Initial Operational Test.
- **1QFY03** Milestone C/III.

Prime Contractors
General Dynamics Land Systems (Sterling Heights, MI); MAN GHH (Germany)



See appendix for list of subcontractors

XM777 Joint Lightweight 155mm Howitzer (LW155)

XM777 Joint Lightweight 155mm Howitzer (LW155)

Mission
Provide close and deep fire support to Army Interim and light forces, and all Marine Corps maneuver forces.

Description and Specifications
The XM777 Joint Lightweight 155mm Howitzer (LW155) is a joint Marine Corps/Army program, in which the Marine Corps funds the howitzer research, development, test and evaluation (RDT&E) and the Army funds the RDT&E for Towed Artillery Digitization (TAD) and other automation enhancements. It will replace the M198 howitzer as a direct and general support system for Army light and Interim forces. The Marine Corps will use the weapon to replace all existing cannon systems. The XM777 incorporates innovative designs to achieve lighter weight without sacrificing the range, stability, accuracy or durability of the current system. The lighter weight is achieved through lower trunnion height and the use of high-strength titanium, a primary component of the lower carriage and cradle assembly. The XM776 cannon tube is a derivative of the U.S. M284 and M199 cannon tubes, and ballistically similar to the M199 cannon tube to provide the range of the M198 howitzer. The XM777's lighter weight, smaller footprint, and lower profile provide improved strategic deployment, tactical mobility, and survivability. The automatic primer feeding mechanism, loader-assist, digital fire control and other automation enhancements will improve survivability, lethality and combat reliability, as well as provide light artillery with a semi-autonomous capability that is currently found only in self-propelled howitzers.

Weight: 9000 lbs or less

Emplace: 3 min or less

Displace: 2 min or less

Maximum range: 30 km (assisted)

Rate-of-fire: 4 rounds/min max, 2 rounds/min sustained

Ground mobility: FMTV, MTVR, current 5-ton trucks

Air mobility: C-5, C-17, C-130, C141, MV-22, CH53D/E, CH47D

155mm compatibility: All fielded and developing NATO munitions

Digital fire control: Self-locating and pointing; on-board firing data computation; digital and voice communications; self-contained power supply. These capabilities are being developed under the TAD Program.

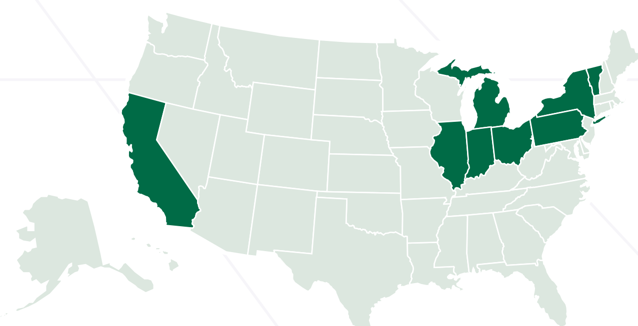
Foreign Counterpart
No known foreign counterpart

Foreign Military Sales
The current LW155 engineering and manufacturing development (EMD) phase is a cooperative effort with the United Kingdom and Italy. Future cooperative production agreements with both allies are currently being negotiated.

Program Status
- BAE Systems of the United Kingdom has delivered five of eight EMD prototype howitzers. The contract with BAE Systems includes options for the first two years of production, starting in FY03. BAE Systems has selected U.S. partners to produce approximately 70 percent of the howitzer.
- The TAD program has completed its Milestone I/II review and General Dynamics Armament Systems (GDAS) has been selected as the prime contractor for the engineering manufacturing and development (EMD) phase of the digital fire control system.
- **1QFY01** Begin howitzer development testing (DT).
- **1QFY02** Delivery of 8 EMD XM777s completed.

Projected Activities
- **3QFY02** Complete howitzer DT and multi-service operational test and evaluation.
- **4QFY02** Howitzer Milestone III; Conclude howitzer EMD phase.
- **3QFY04** USMC initial operational capability (IOC).
- **1QFY05** Army IOC.

Prime Contractors
Howitzer: BAE Systems (United Kingdom)



See appendix for list of subcontractors

Recapitalization

The Army will rebuild and upgrade select systems currently fielded to ensure operational readiness and to ensure that the Legacy Force has the equipment to maintain combat overmatch over any potential enemy. Expenditures in this area will be the minimum necessary to meet this goal, while The Army focuses all necessary resources on the research, development, and fielding of the Objective Force.

Through selected upgrades, certain systems will add warfighting improvements to address capability shortcomings (such as the M1A2 Abrams, the M2A3 Bradley Fighting Vehicle, the PATRIOT air defense missile system, the AH-64D Apache Longbow helicopter, the CH-47F Chinook/improved cargo helicopter, the Black Hawk UH-60L+, and other items due to undergo qualitative upgrades).

Recapitalization objectives also include reducing operating and support costs, extending useful life, improving reliability, and enhancing capability.

M1A1

M1A2

M1A2 System Enhancement program (SEP)

Mission
Provide heavy armor superiority on the battlefield.

Description and Specifications
The Abrams tank closes with and destroys enemy forces on the integrated battlefield using mobility, firepower and shock effect. The 120mm main gun on the M1A1 and M1A2, combined with the powerful 1,500 hp turbine engine and special armor, make the Abrams tank particularly suitable for attacking or defending against large concentrations of heavy armor forces on a highly lethal battlefield. The Abrams tank modernization strategy supports the Army Vision and Transformation by providing the Abrams tank the lethality, survivability and fightability improvements to defeat advanced threats well into the future.

Features of the M1A1 modernization program include increased armor protection; suspension improvements; and a nuclear, biological and chemical (NBC) protection system that increases survivability in a contaminated environment. The M1A1D modification consists of an M1A1 with integrated applique computer and a far-target-designation capability.

The M1A2 modernization program includes a commander's independent thermal viewer, an improved commander's weapon station, position navigation equipment, a distributed data and power architecture, an embedded diagnostic system and improved fire control system. The M1A2 System Enhancement Program (SEP) adds second-generation thermal sensors and a thermal management system (TMS). The SEP includes upgrades to processors/memory that enable the M1A2 to use the Army's common command and control software, enabling the rapid transfer of digital situational data and overlays. The Abrams modernization strategy also includes a new engine program, the Abrams Integrated Management (AIM) Overhaul Program, and parts obsolescence program, which will reduce the operational and support costs and logistical footprint associated with the Abrams.

	M1/IPM1	M1A1	M1A2	M1A2 SEP
Length:	32.04 ft	32.04 ft	32.04 ft	32.04 ft
Width:	12.0 ft	12.0 ft	12.0 ft	12.0 ft
Height:	7.79 ft	8.0 ft	8.0 ft	8.0 ft
Top speed:	45.0 mph	41.5 mph	41.5 mph	42 mph
Weight:	61.4/62.8 tons	67.6 tons	68.4 tons	69.5 tons
Armament:	105mm	120mm	120mm	120mm
Crew:	4	4	4	4

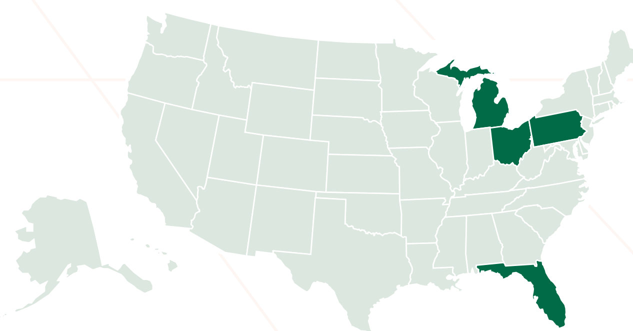
Foreign Counterpart
France: Leclerc; Germany: Leopard 2; Israel: Merkava Mk. 3; Italy: C1 Ariete; Russia: T-64, T-72, and T-80; United Kingdom: Challenger 2.

Foreign Military Sales
Egypt: 555 M1A1 Kits; Kuwait: 218 M1A2s; Saudi Arabia: 315 M1A2s; 200 additional M1A1 kits to Egypt in process.

Program Status
- Continue upgrade of the M1 to M1A2 SEP until the M1A2 SEP upgrade production ends in FY03 and continue to upgrade the M1A2 to M1A2SEP via retrofit through FY08 for a total of 966 vehicles.
- In 1999, the Army began the AIM program in order to recapitalize the hi-optempo M1A1 tank fleet. AIM recapitalization is scheduled to continue through at least FY07. The preparation for the modification of M1A1s to the M1A1D configuration is inherent to the ongoing AIM overhaul program.

Projected Activities
- **FY01-08** M1A2 SEP production and retrofit programs. The total M1A2 SEP fleet is projected to be 966 vehicles.
- **2-4QFY02** Participate in the FBCB2 Initial Operational Test and Evaluation (IOT&E) at Ft. Hood, TX, Division Capstone Exercises.
- **FY02** Continuation of fielding of M1A2 SEPs to 1st Brigade, 1st Cavalry Division, Ft. Hood, TX.

Prime Contractors
General Dynamics (Sterling Heights, MI; Warren, MI; Muskegon, MI; Scranton, PA; Lima, OH; Tallahassee, FL)



See appendix for list of subcontractors

Apache Longbow

Apache Longbow

Mission

Conduct rear, close and deep operations and deep precision strikes; provide armed reconnaissance and security when required in day, night and adverse weather conditions.

Description and Specifications

The AH-64 Apache is the Army's heavy division/corps attack helicopter. The AH-64D Longbow remanufacture effort incorporates a millimeter wave fire control radar (FCR), radar frequency interferometer (RFI), fire-and-forget radar-guided HELLFIRE missile and cockpit management and digitization enhancements. The combination of the FCR, RFI, and the advanced navigation and avionics suite of the aircraft provide increased situational awareness, lethality and survivability. Both A and D models are programmed for recapitalization to address Task Force Hawk/Kosovo lessons learned, such as second generation forward looking infrared radar (FLIR), non line-of-sight communications, video transmission/reception, etc., and to reduce maintenance cost drivers. Apache provides the maneuver commander a highly mobile and lethal aerial weapons platform with an array of armaments to destroy armor, personnel and materiel targets day or night and under obscured battlefield and/or adverse weather conditions. Apache is assigned to attack battalions and cavalry units in accordance with the 2002 Army Modernization Plan.

Apache Longbow will add significant warfighting capability to the combined arms team through increased survivability, lethality, versatility and long-term reliability improvements.

The Army will convert a total of 501 A models to the Longbow configuration. Multi-Year I delivers 232 AH-64Ds by FY02. A second multi-year contract for an additional 269 AH-64Ds is also programmed with deliveries through FY07. Fielding of the second generation FLIR to the Apache fleet begins in FY04.

Combat mission speed: 167 mph

Combat range: 300 miles

Combat endurance: 2.5 hours

Mission weight: 16,600 lbs

Armament: HELLFIRE missiles, 2.75" rockets and 30mm chain gun

Crew: 2 (pilot and co-pilot gunner)

Foreign Counterpart

The Tiger helicopter is produced by a Franco-German consortium under the European Aerospace and Defense Systems (EADS).

Foreign Military Sales

The Netherlands, Singapore, Egypt, Israel; Commercial sale: United Kingdom, Japan.

Program Status

- **1QFY96** The Apache Longbow system completed full scale development and entered the production and deployment phase in October 1995.
- **2QFY97** The first production model aircraft was delivered in March 1997. Technical successes during the proof-of-principle phase in 1990, initial operational test and evaluation, and the Army's Warfighting Experiment at the National Training Center in the spring of 1997 proved the AH-64D to be an operationally effective and suitable weapon system, far more effective in defeating threat armored vehicles and more survivable against threat air defense weapons than the AH-64A.
- **FY00** Began second-generation FLIR development.
- **4QFY00** Awarded MYII option FY01 to FY05.
- **1QFY01** Awarded modernized-target acquisition and designation sight/pilot night vision sensor (second generation FLIR) to Team Apache (joint venture consisting of Lockheed-Martin and Boeing).
- **Current** The current program objective calls for the upgrade of 501 A model Apaches to the AH-64D Longbow configuration, of which 227 will be equipped with FCR and the upgraded T701C engine.

Projected Activities

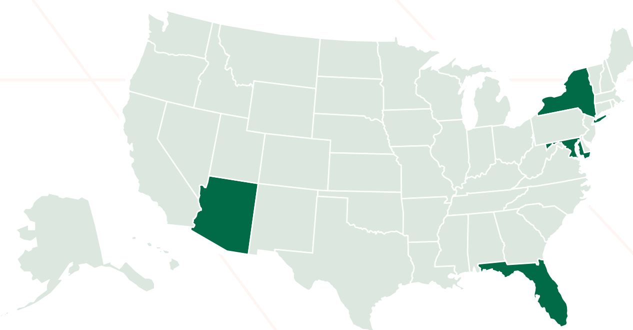
- Continue Apache Longbow fielding (five battalions have been fielded to date - four in continental U.S. and one outside continental U.S. Sixth to be fielded 3QFY02).

Prime Contractors

Airframe: Boeing (Mesa, AZ)

Fire Control Radar: Northrop Grumman (Linthicum, MD); Lockheed Martin (Owego, NY)

MTADS/PNVS: Lockheed Martin (Orlando, FL); Boeing (Mesa, AZ)



See appendix for list of subcontractors

Recapitalization

Black Hawk (UH-60)

Mission

Provide air assault, general support, aeromedical evacuation, command and control and special operations support to combat and stability and support operations.

Description and Specifications

The Black Hawk (UH-60) is a utility tactical transport helicopter that replaces the UH-1 "Huey." The versatile Black Hawk has enhanced the overall mobility of the Army, due to dramatic improvements in troop capacity and cargo lift capability, and will serve as the Army's utility helicopter in the Objective Force. On the asymmetric battlefield, it provides the commander the agility to get to the fight quicker and to mass effects throughout the battlespace across the full spectrum of conflict. An entire 11-person, fully equipped infantry squad can be lifted in a single Black Hawk, transported faster than in predecessor systems, in most weather conditions. The Black Hawk can reposition a 105mm howitzer, its crew of six, and up to 30 rounds of ammunition in a single lift. The aircraft's critical components and systems are armored or redundant, and its airframe is designed to progressively crush on impact to protect the crew and passengers.

	UH-60A	UH-60L
Max gross weight:	20,250 lbs	22,000 lbs, 23,500 lbs (external cargo)
Cruise speed:	139 kt	150 kt
Endurance:	2.3 hrs	2.1 hrs
Max range:	320 nm	306 nm
External load:	8000 lbs	9000 lbs
Internal load:	2640 lbs (or 11 combat-equipped troops)	
Crew:	2 pilots, 2 crew chiefs	
Armament:	Two 7.62mm machine guns	

Foreign Counterpart

French: Puma, NH90; Russia: HIP series aircraft; United Kingdom: Lynx, EH-101.

Foreign Military Sales

Bahrain, Colombia, Egypt, Israel, Saudi Arabia.

Commercial Sales: Argentina, Australia, Bahrain, Brazil, Brunei, China, Greece, Hong Kong, Japan, Jordan, Malaysia, Mexico, Morocco, Philippines, Spain, Taiwan, Thailand, Turkey.

Co-production: Republic of Korea.

Program Status

Initiated risk reduction activities under research, development, test, and evaluation program to integrate and qualify the UH-60M.

Signed cost plus award fee contract with Sikorsky Aircraft for the UH-60M Program.

Initiated UH-60M Program to recapitalize and upgrade fielded UH-60A and UH-60L Black Hawk to the UH-60M configurations. The UH-60M will include a digitized cockpit to provide situational awareness, standardized configuration, upgraded engine (701) and power train, and a zero-time, zero-mile service life extension.

Executed last year of FY97-FY01 Multi-Year V contract, UH-60L deliveries run through June 2002.

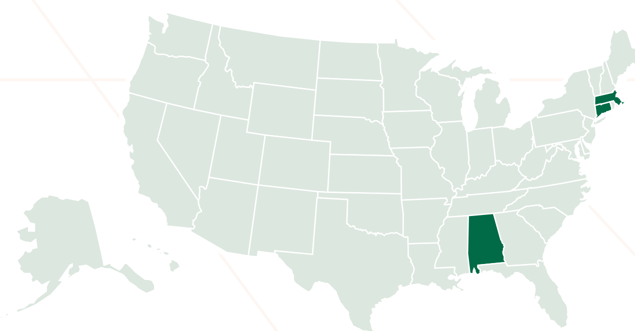
Inducted first UH-60A model aircraft for A to A Recap Program.

Projected Activities

- **FY02** Award new 5 year (FY02 - FY06) Multi-Year contract to produce UH-60L model aircraft. Initiate program to upgrade all flight simulators to latest UH-60L configuration. Conduct UH-60M airframe Critical Design Review.
- **FY03** Conduct First Flight and Developmental Test on UH-60M test articles.
- **FY04** Begin UH-60M LRIP Lot #1 for 10 aircraft. UH-60M Milestone Decision.

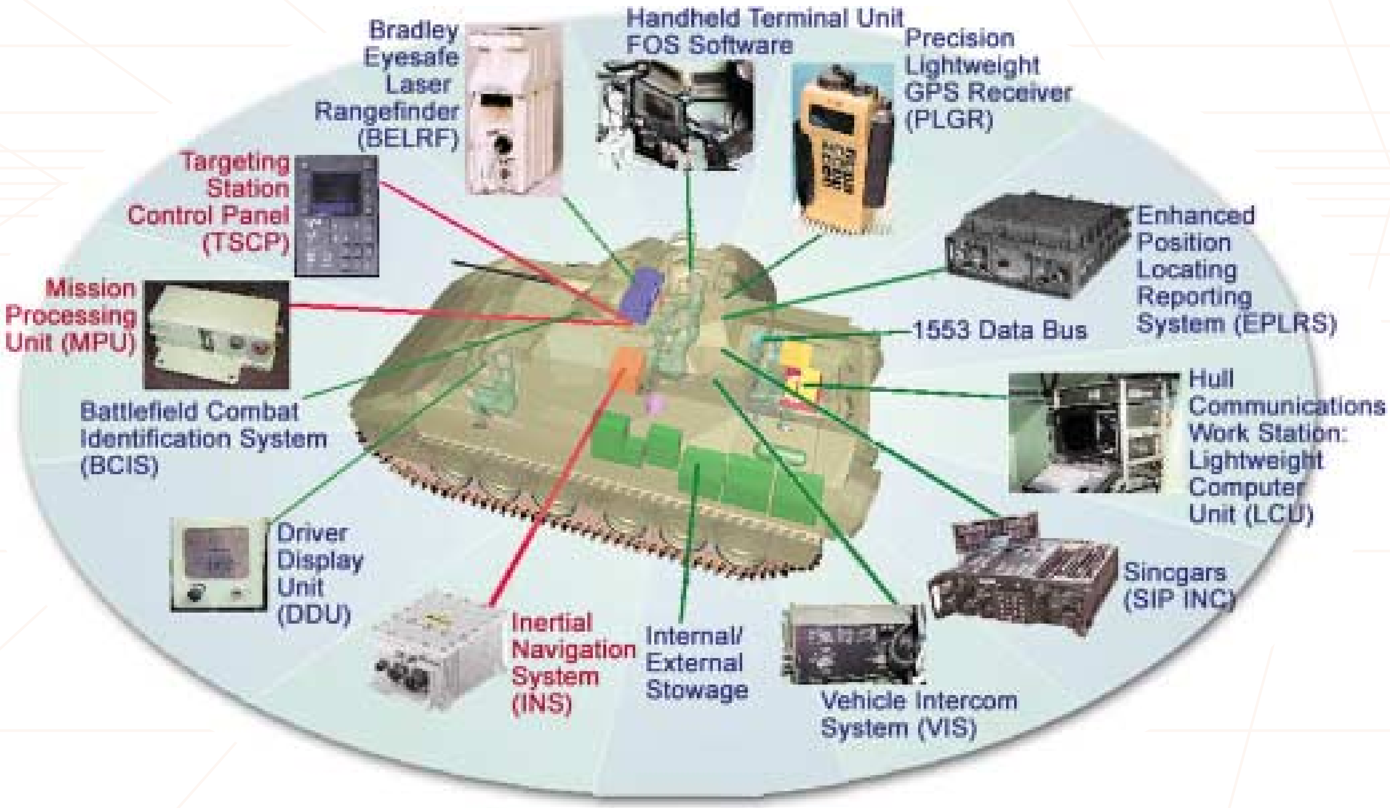
Prime Contractors

United Technologies (Stratford, CT); General Electric (Lynn, MA)



See appendix for list of subcontractors

Bradley Fire Support Team (BFIST) Vehicle



Bradley Fire Support Team (BFIST) Vehicle

Mission

Provide an integrated Bradley-based fire-support platform that enables company fire-support teams to plan, coordinate, execute, and direct timely, accurate, indirect fires for supported maneuver companies.

Description and Specifications

Plans for the Bradley Fire Support Team (BFIST) Vehicle production include both Bradley M2A2 Operation Desert Storm-based improvements (M7 BFIST) and M3A3 variants (A3 BFIST). Characteristics include the following:

Length: 21.5 ft

Width: 11.83 ft with armor tiles; 10.75 ft without armor tiles

Height: 11.8 ft

Weight: 60,000 lbs combat-loaded

Power train: 600 hp Cummins V093T diesel engine with GM-Allison HMPT-500-3 hydro-mechanical automatic transmission

Cruising range: 250 mi

Road speed: 38 mph

Crew: 4

Vehicle armament: 25mm Bushmaster cannon; 7.62mm, M240C machine gun

Distribution: Direct support field artillery battalions, howitzer batteries of cavalry squadrons

Current models/variants: M7 BFIST, A3 BFIST

Foreign Counterpart

Commonwealth of Independent States: BMP PRP-3, BMP PRP-4; France: AMX-10 PAC-90, AMX VTT/LT; United Kingdom: MCV-80 Warrior MAOV, FV-432 AV.

Foreign Military Sales

None

Program Status

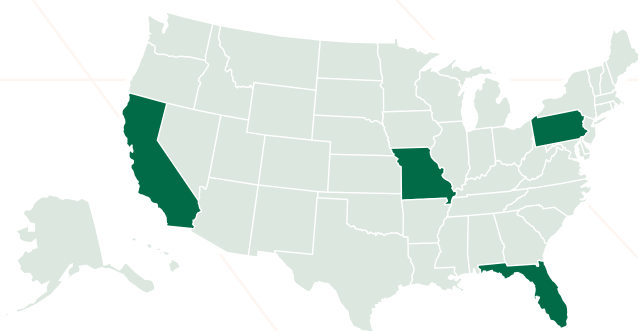
- M7 BFIST continues in full rate production (FRP).
- A3 BFIST development contract delivered first vehicle 1QFY01 for test validation.
- Fielding to 3rd Infantry Division and 3rd Armored Cavalry Regiment completed.

Projected Activities

- Continue M7 BFIST FRP.
- Fielding to 1st Cavalry Division and 2nd Infantry Division in Korea.

Prime Contractors

United Defense, L.P. (York, PA; San Jose, CA); Systems & Electronics, Inc. (St. Louis, MO; Sanford, FL); Honeywell (Clearwater, FL)



See appendix for list of subcontractors

Bradley M2 Infantry/M3 Cavalry Fighting Vehicle

Bradley M2 Infantry/M3 Cavalry Fighting Vehicle

Mission

Provide infantry and cavalry fighting vehicles with digital command and control capabilities, significantly increased situational awareness, enhanced lethality, survivability, and improved sustainability and supportability.

Description and Specifications

The Bradley M2A3 Infantry/M3A3 Cavalry Fighting Vehicle (IFV/CFV) is configured as follows:

Length: 21.5 ft

Width: 11.83 ft with armor tiles; 10.75 ft without armor tiles

Height: 11.8 ft

Weight: 67,000 lbs combat loaded

Power train: 600 hp Cummins VTA-903T diesel engine with GM-Allison HMPT-500-3EC hydro-mechanical automatic transmission

Cruising range: 250 mi

Road speed: 38 mph

Crew: M2A3: 9 (3 crew; 6 dismounts); M3A3: 5 (3 crew; 2 dismounts)

Vehicle armament: 25mm Bushmaster cannon; TOW II missile system; 7.62mm M240C machine gun

Vehicle features: Two second generation forward looking infrared (FLIR) sensors in the Improved Bradley Acquisition System (IBAS) and Commander's Independent Sight (CIV) provide "Hunter-Killer target handoff" capability with ballistic fire control system; embedded diagnostics; integrated combat command and control (IC3) digital communications suite hosting Force XXI Battle Command Brigade-and-Below (FBCB2) package with digital maps, messages and friend/foe situational awareness; position navigation system with GPS and inertial navigation system; and enhanced squad situational awareness with squad leader display integrated into vehicle digital images and IC3.

Current models/variants: Bradley M2/M3 A0, A2, A2 ODS (Operation Desert Storm), A3 IFV/CFVs, Bradley Fire Support Team (BFIST) Vehicle, Bradley Linebacker, and MANPADS Under Armor (MUA).

Foreign Counterpart

China: Type 90, WZ-503; Commonwealth of Independent States: BMP 1, 2, and 3; France: AMX-10P, AMX VCI; Germany: Marder 1; United Kingdom: MCV-80 Warrior, FV-432.

Foreign Military Sales

Bradley M2A2s: Royal Saudi Land Forces, Kingdom of Saudi Arabia.

Program Status

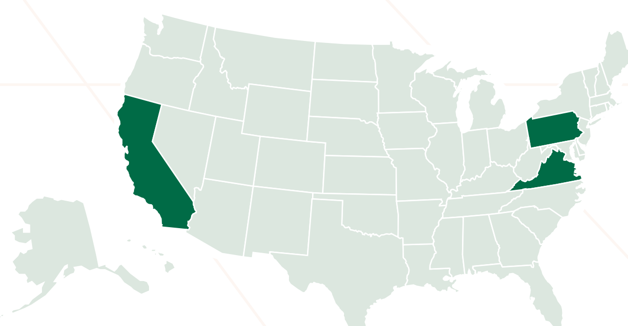
- **FY99** The Bradley Program Office completed upgrading Bradley A1s to the A2 configuration, thereby eliminating Bradley A1s from the American inventory.
  - The Bradley Recapitalization Program, approved by the Army on August 17, 2001, provides 1037 M2/3A3s and 295 ODS-D (Operation Desert Storm) for the Counter Attack Corps. The Army will cascade ODS variants to the Containment Force and make an FY03 decision whether or not to digitize the entire Containment Force.
- **1QFY02** Current Bradley A2 to A2 ODS modification for the Active Army continues, as well as the conversion of Bradley A0 to A2 ODS for the Army National Guard, and the A2 to A3 remanufacture effort; Bradley A3 is in full rate production; Bradley A3 has completed fielding to two A3 Battalions along with one Battalion of A2 ODS-D retrofitted to meet First Digital Division timelines.
- **1QFY02** Bradley A3 fielding to 1st CAV.

Projected Activities

- **FY02** Continue modification of Bradley A2s to A2 ODS and fielding; Continue ARNG A0 conversion to A2 ODS.
- **FY02** BFV continues second year of multi-year contract.

Prime Contractors

United Defense, L.P. (San Jose, CA; Fayette, PA; York, PA; Arlington, VA)



See appendix for list of subcontractors

CH-47 Chinook/Improved Cargo Helicopter (CH-47F)

CH-47 Chinook/Improved Cargo Helicopter (CH-47F)

Mission
Transport ground forces, supplies, ammunition and other battle-critical cargo in support of worldwide combat and contingency operations.

Description and Specifications
As the Army's only Objective Force heavy-lift cargo helicopter capable of intra-theater cargo movement of payloads greater than 9000 lbs, the CH-47 Chinook/Improved Cargo Helicopter (CH-47F) is an essential component of the Army Vision. The CH-47F program will remanufacture 300 of the current fleet of 431 CH-47D Chinook helicopters, install a new digital cockpit, and make modifications to the airframe to reduce vibration.

The upgraded cockpit will provide future growth potential and will include a digital data bus that permits installation of enhanced communications and navigation equipment for improved situational awareness, mission performance, and survivability. Airframe structural modifications will reduce harmful vibrations, reducing operations and support (O&S) costs and improving crew endurance. Other airframe modifications reduce by approximately 60 percent the time required for aircraft tear down and build-up after deployment on a C-5 or C-17. These modifications significantly enhance the Chinook's strategic deployment capability.

A separate but complementary effort is the installation of more powerful and reliable T55-GA-714A engines that improve fuel efficiency and enhance lift performance by approximately 3900 lbs. Installation of an improved crashworthy extended range fuel system (ERFS II) will enable Chinook self-deployment and extend the operational radius of all other missions. A program is also underway to reduce O&S costs through the joint development with the United Kingdom of a low-maintenance rotor hub.

Max gross weight: 50,000 lbs

Max cruise speed: 170 knots/184 miles per hour

Troop capacity: 36 (33 troops plus 3 crewmembers)

Litter capacity: 24

Sling-load capacity: 26,000 lb center hook, 17,000 lb forward/aft hook, 25,000 lb tandem

Minimum crew: 3 (pilot, co-pilot, and flight engineer)

Foreign Counterpart
Russia: MI-26; United Kingdom: EH-101.

Foreign Military Sales
Australia, Egypt, Greece, Taiwan. Direct Sales: Korea, Netherlands, Singapore, Spain, and United Kingdom.

Program Status
- **3QFY98** Awarded the engineering and manufacturing development (EMD) contract, slated for completion FY03.

T55-GA-714A Engine:

- **1QFY98** Commenced low-rate initial production (LRIP).
- **1QFY00** First unit equipped.
- **2QFY00** Currently fielding for the CH-47D/MH-47D/MH-47E.

Extended Range Fuel System (ERFS):

- **4QFY98** Awarded the improved ERFS II production contract. Initial deliveries were deployed in support of operations in Kosovo.
- **2QFY00** ERFS received a full materiel release.
- **3QFY01** First flight (EMD).

Projected Activities
- **1QFY05** First LRIP CH-47F delivery.
- **2QFY06** First unit equipped.

T55-GA-714A Engine:

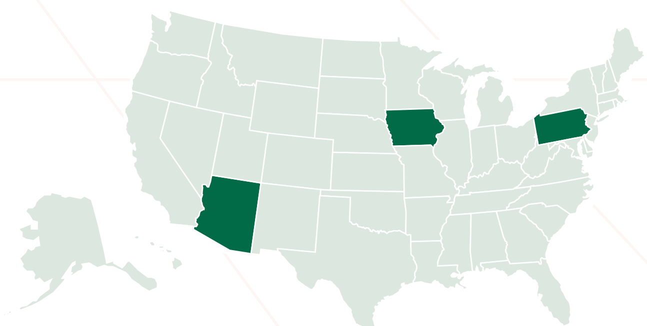
- **2QFY08** Scheduled completion.

Prime Contractors
Aircraft: Boeing (Philadelphia, PA)

Cockpit Upgrade: Rockwell Collins (Cedar Rapids, IA)

Engine Upgrade: Honeywell (Phoenix, AZ)

ERFS II: Robertson Aviation (Tempe, AZ)



See appendix for list of subcontractors

Field Artillery Ammunition Support Vehicle (FAASV)

Field Artillery Ammunition Support Vehicle (FAASV)

Mission
Provide a highly mobile resupply vehicle for the Paladin 155mm artillery system.

Description and Specifications
The M992 Field Artillery Ammunition Support Vehicle (FAASV) is a fully tracked, self-propelled, diesel powered, field artillery support vehicle. It is capable of long-range, high-speed operation on unimproved roads. It is also well suited for cross-country operation. The resupply vehicle has increased payload capacity and contains automated conveyer delivery of fuzed artillery cargo. It has excellent ground mobility for improved battlefield responsiveness and a highly improved survivability that allows extended fire support missions. The FAASV is fielded one-for-one with the M109A6 Paladin. The FAASV incorporates special equipment which improves the overall efficiency of the Field Artillery section, including:

- Ammunition handling equipment
- Horizontal projectile and propellant storage racks
- Powered conveyor that delivers rounds directly to the howitzer
- General support equipment
- Simplified test equipment/internal combustion engine (STE/ICE)
- Auxiliary Power Unit (APU) to run the hydraulic equipment and charge vehicle batteries
- Ventilation face piece system
- Automatic fire extinguisher system.

The FAASV carries:

- 90 155mm projectiles
- 96 propelling charges
- 3 Copperhead projectiles

Combat loaded weight is 57,500 lbs; empty weight is approximately 45,000 lbs.

Maximum speed: 35 mph

Range: 220 mi

Crew: 4 with M109A3/A5, 5 with Paladin

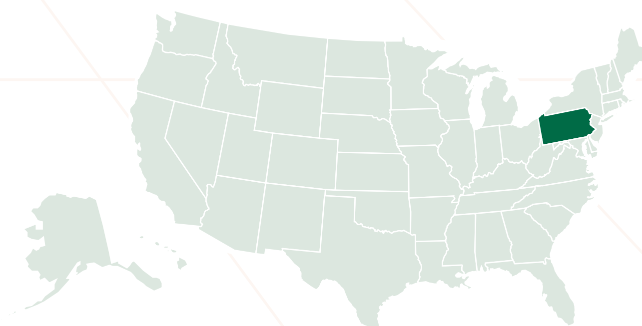
Foreign Counterpart
No known foreign counterpart

Foreign Military Sales
None

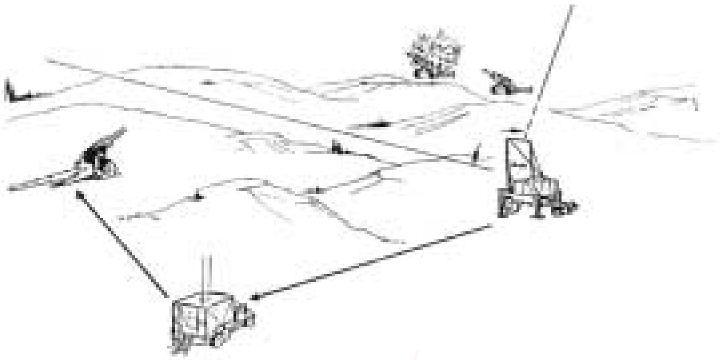
Program Status
- First unit equipped in 1985.
- Completed VIS modification work order to entire fleet.
- Completed production program in FY01.
- Completed Phase I of Halon Replacement.
- Completed Fielding to Active Army and 18 US ARNG battalions in FY01.
- VCSA approved FAASV RECAP Program in FY01.

Projected Activities
- Develop RECAP criteria to support FY03 Program.
- Complete 10KW APU integration.
- Complete MACS integration.
- Complete Phase II Halon Replacement.
- Complete RECAP FY03-06.

Prime Contractors
United Defense, L.P. (York, PA)



See appendix for list of subcontractors



Firefinder (AN/TPQ-36 (V)8)

Mission

Detect and locate enemy mortars and artillery firing positions quickly and accurately enough to permit immediate engagement; observe registrations and help the fire director center adjust fire for friendly artillery units (only when absolutely necessary).

Description and Specifications

AN/TPQ-36 (V)8 Firefinder Radar, electronics upgrade (EU), replaces the existing shelter that was fielded in the early 1980s but utilizes the same antenna. This materiel change greatly improves the operations central shelter through the installation of state-of-the-art electronics, including common hardware systems in the lightweight multi-purpose shelter (LMS). The electronics upgrade greatly increases mortar detection range and target throughput and greatly improves the operator environment.

The electronics upgrade is an open systems architecture design and will enable Firefinder to communicate on the digitized battlefield. The radar will also incorporate dual environmental control units and a gas particulate filter unit for greater survivability and soldier comfort. Major subsystems of the radar include an operator control station, a control display terminal, and a radar processor. The control station is the man-machine interface and is a modern Windows-type display. Using the display terminal, the operator will be able to control system operations from a site up to 100 meters from the LMS. The radar processor performs all system signal processing functions, maximizing performance with more than a 90 percent probability of weapon location and a 90 percent correct target classification.

The electronic upgrade and new light weight multi-purpose shelter will enhance the man-machine interfaces and electronics environment by providing more than 50 percent more interior space and improved environmental control. EU will reduce life-cycle costs, prevent obsolescence and enhance crew survivability.

Foreign Counterpart

European Consortium-Sponsored EuroArt Cobra; Sweden: Arthur System; Russia: Zoopark; China: BL904.

Foreign Military Sales

AN/TPQ-36 (V)8: Turkey: 4 systems in production; Portugal: 2 systems in production.

Program Status

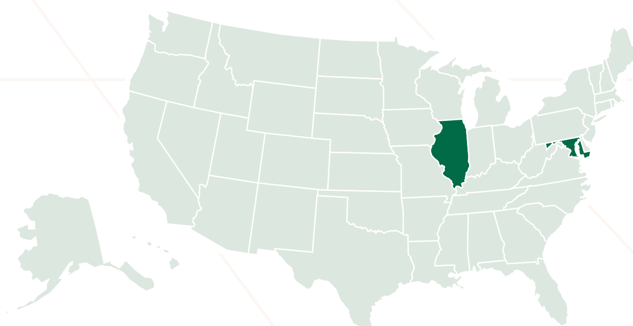
- **4QFY96** Awarded initial production contract. A total of 44 systems have been delivered, 22 for the U.S. Army and 22 for the United States Marine Corps (USMC).
- **FY99** Commenced fielding to Army and USMC units; currently ongoing.
- **4QFY99** Awarded follow-on production contract for additional U.S. and foreign military sales systems.
- **Current** Continue fieldings.

Projected Activities

- **FY01-04** Procure additional systems.
- **FY02-05** Complete fielding.

Prime Contractors

Northrop Grumman (Rolling Meadows, IL; Baltimore, MD)



See appendix for list of subcontractors


AFRC
4402

Mission

Perform line and local haul, unit resupply, and related missions in a tactical environment (brigade/battalion areas of operation) in support of legacy equipped, digitized, and transformation force combat units.

Description and Specifications

The Heavy Expanded Mobility Tactical Truck-Load Handling System (HEMTT-LHS) consists of a standard HEMTT (M977/M978 or M985 chassis) prime mover (8 x 8-foot configuration) equipped with an integral load-handling system providing self-load/unload capability and capable of transporting an 11-ton payload. LHS carries equipment/ammunition/supply loads on demountable “flatrack” cargo beds and is able to tow an 11-ton payload trailer also capable of carrying flatracks. The containerized roll-in/out platform (CROP), an A-frame type flatrack that fits inside a 20-foot International Standards Organization container, gives LHS added cargo carrying flexibility. Flatracks and CROPs are interchangeable between HEMTT-LHS and the Palletized Load System (PLS). HEMTT-LHS provides the soldier with an efficient and economic system with capabilities similar to that of PLS and is a major enabler in the Army’s drive to achieve a distribution-based logistics system.

Truck payload: 11.0 tons

Trailer payload: 11.0 tons

Flatrack dimensions: 8 x 20 ft

Engine type: Diesel

Transmission: Automatic

Number of driven wheels: 8

Range: 300 mi

Air transportability: C-130, C-17, C-5

Foreign Counterpart

United Kingdom: Demountable Rack Off-Loading and Pick-Up System

Foreign Military Sales

None

Program Status

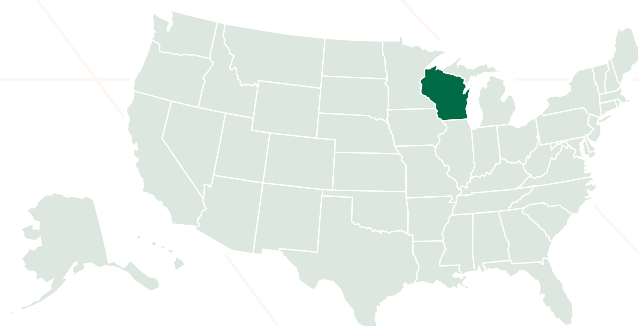
- HEMTT-LHSs were delivered to units of the First Digitized Division (4th Infantry Division, Ft. Hood) and to the Initial Brigade Combat Teams (Ft. Lewis) for the new Truck Motor Transport Company.

Projected Activities

- Continued delivery of a Container Handling Unit (CHU) for use with the LHS in the Interim Brigade Combat Team (IBCT). While not 100 percent common with the PLS CHU, the LHS CHU will have a high degree of commonality.
- In **FY02**, HEMTT-LHSs will be produced to begin fielding of the Second Digitized Division (1st Calvary Division, Ft. Hood), fill training base requirements, and complete the 3d Brigade Combat Team activation/conversion.
- Prototype development of the LHS-based THAAD missile launcher.

Prime Contractors

Oshkosh Truck (Oshkosh, WI)



See appendix for list of subcontractors


R04

Mission

Provide towing, winching, and hoisting operations to support battlefield recovery operations and evacuation of heavy tanks and other tracked combat vehicles.

Description and Specifications

The Hercules has been type-classified as the M88A2. It is a full-tracked, armored vehicle that uses the existing M88A1 chassis but significantly improves towing, winching, lifting, and braking characteristics. The Hercules is the primary recovery support for the Abrams tank fleet, the Heavy Assault Bridge, and heavy self-propelled artillery.

Length: 338 in

Height: 123 in

Weight: 70 tons

Speed: 25 mph w/o load, 17 mph w/load

Boom capacity: 35 tons

Winch capacity: 70 tons/300 ft

Auxiliary winch capacity: 3 tons/670 ft

Armament: One .50-caliber machine gun

Power train: 12 cylinder, 1050 hp air-cooled diesel engine with 3-speed automatic transmission

Width: 144 in

Cruising range: 200 mi

Draw bar pull: 70 tons

Foreign Counterpart

There is no foreign counterpart that provides the combined weight, towing, winch and hoist capacities of the Hercules. Many foreign nations, however, continue to incorporate improved recovery systems onto existing recovery or main battle tank chassis.

Foreign Military Sales

Kuwait; Egypt (co-production).

Program Status

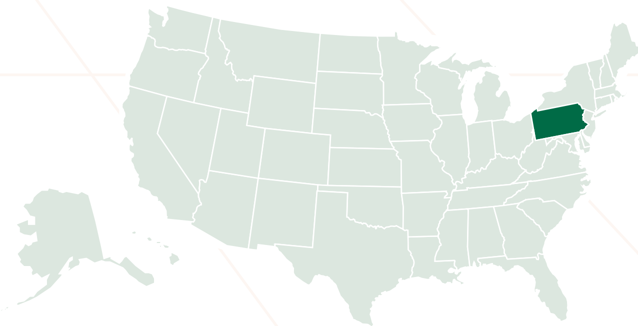
- **FY97** Type-classified standard.
- **4QFY97** First unit equipped.
- **FY94-99** Procured 102 vehicles.
- **FY97-01** Fielded to 1st Cavalry Division, 1st, 2nd, and Aviation Brigades of 4th Infantry Div; TRADOC OC&S and AC&S.
- **Current** The Hercules program was restored in the FY01 President's Budget as a recapitalization effort in support of the Army Vision.

Projected Activities

- Fielding to 3rd Brigade of 4th Infantry Division and 3rd ACR.

Prime Contractors

United Defense, L.P. (York, PA)



See appendix for list of subcontractors

High Mobility Multipurpose Wheeled Vehicle (HMMWV)

High Mobility Multipurpose Wheeled Vehicle (HMMWV)

Mission
Provide a common light tactical vehicle capability.

Description and Specifications
The High Mobility Multipurpose Wheeled Vehicle (HMMWV) is a light, highly mobile, diesel-powered, four-wheel-drive vehicle that uses a common chassis. Using common components and kits, the HMMWV can be configured to become a troop carrier, armament carrier, S250 shelter carrier, ambulance, TOW missile carrier, and a Scout vehicle. The heavy variant, with a payload of 4,400 lbs, was developed as the prime mover for the light howitzer, towed VULCAN system, and heavier shelter carriers. It is a tri-service program that also provides vehicles that satisfy Marine Corps and Air Force requirements. The HMMWV replaced the .25 ton Jeep, the M718A1 ambulance, .5-ton mule, 1.25-ton Gamma Goat, and M792 ambulance. Since its inception, the HMMWV has undergone numerous design and configuration updates and changes. These changes have included technological, environmental, operational, and safety improvements, such as higher payload capability, radial tires, 1994 Environmental Protection Agency emissions update, commercial bucket seats, three-point seat belts, four-speed transmissions, and, in some cases, turbocharged engines and air conditioning.

An up-armored HMMWV was developed to provide increased ballistic (up to 7.62mm NATO AP) and blast protection (12lb mine, front; 4lb mine, rear) primarily for the Military Police (MP) and contingency force use. In 1995, the Program Manager introduced the A2 configuration and the expanded capacity vehicle (ECV) HMMWV. The A2 incorporates the four-speed, electronic transmission; the 6.5 liter diesel engine; and improvements in transportability. The A2 serves as a platform for other Army systems such as the ground-based common sensor. The ECV vehicle also went into production in 1995. The payload of this vehicle is 5100 lbs, including the crew. The ECV chassis is used for the M1114 up-armored HMMWV and serves as a platform for mission payloads and for systems that exceed 4400 lbs.

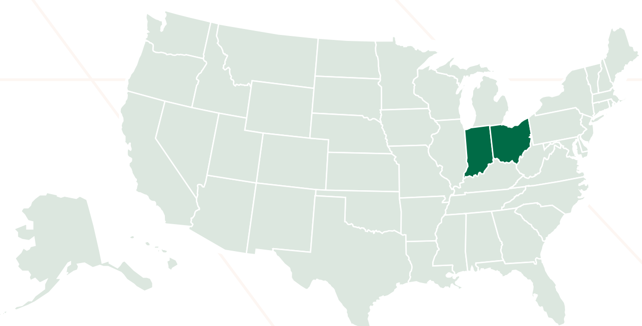
Foreign Counterpart
Certain models of the HMMWV have counterparts such as the Swiss MOWAG, the French PANHARD, and the German UNIMOG.

Foreign Military Sales
Argentina, Bahrain, Bolivia, Chad, Columbia, Djibouti, Ecuador, Egypt, Ethiopia, Honduras, Israel, Kuwait, Luxembourg, Mexico, Oman, Philippines, Saudi Arabia, Sudan, Taiwan, Tanzania, Tunisia, and Uganda.

Program Status
- **FY00** Continue production under a five-year requirements contract. Current production supports Army, Air Force, Marine Corps, and foreign military sales requirements.
- **4QFY00** Awarded research, development, test and evaluation contract for development of the block modernization.
- **1QFY01** Approved A2 Production Contract.

Projected Activities
- Award contract for the research and development of the HMMWV recapitalization.

Prime Contractors
AM General (South Bend, IN); O'Gara-Hess & Eisenhardt (Fairfield, OH)



See appendix for list of subcontractors

Recapitalization

M113 Family of Vehicles (FOV)

Mission

Provide a highly mobile, survivable, and reliable tracked-vehicle platform.

Description and Specifications

The M113 Family of Vehicles (FOV) is designed to maintain pace with Abrams and Bradley-equipped units and to adapt to a wide range of current and future battlefield tasks through the integration of specialized mission modules at minimum operational and support cost. Current models include the following: M58 Mechanized Smoke Obscurant System, M548A1/A3 Cargo Carrier, M577A2/A3 Command Post Carrier, M901A1 Improved TOW Vehicle, M981 Fire Support Team Vehicle, M1059/A3 Smoke Generator Carrier, M1064/A3 Mortar Carrier, M1068/A3 Standard Integrated Command Post System Carrier, and OPFOR Surrogate Vehicle (OSV).

Foreign Counterpart

China: Type 577, Type YW-534; Commonwealth of Independent States: BTR-50P, MTLB; France: AMX VCI; United Kingdom: FV-432, FV-4333

Foreign Military Sales

Belgium, Bolivia, Ecuador, Ethiopia, Guatemala, Japan, Libya, Netherlands, New Zealand, Singapore, Somalia, Sudan, Switzerland, Tunisia, England, Uruguay, Vietnam, and Zaire.

Program Status

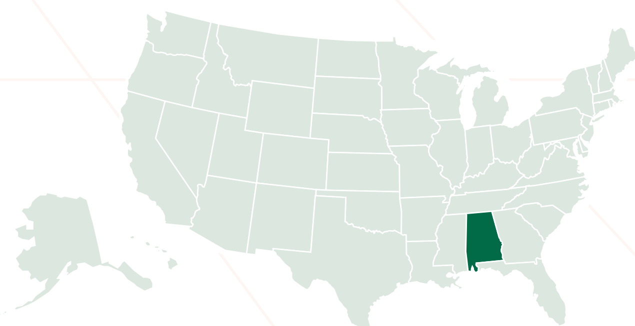
- **FY01** Continued to convert A2 models to the A3 configuration; 72 M113A3 APCs, 175 M577A3 Command Post Carriers, and 77 Opposing Forces Surrogate Vehicles (OSVs) will be produced under the FY01 contract.

Projected Activities

- Convert M577A2s to M577A3s in FY02.
- Install new, longer life T-150 track on all M113 FOVs in Counterattack Corps units starting in FY03.

Prime Contractors

Anniston Army Depot (Anniston, AL); United Defense, L.P. (Anniston, AL)



See appendix for list of subcontractors

Multiple Launch Rocket System (MLRS)

Mission

Provide counterbattery fire and suppression of enemy air defenses, light materiel, and personnel targets.

Description and Specifications

The Multiple Launch Rocket System (MLRS) is an artillery weapon system that supplements cannon artillery fires by delivering large volumes of firepower in a short time against critical, time-sensitive targets. The MLRS is capable of supporting and delivering all freeflight basic and extended range (ER-MLRS) rockets and Army Tactical Missile System (ATACMS) Block I missiles. The basic warhead carries improved conventional submunitions. Growth programs are underway to extend the range and accuracy of the rockets and to upgrade the launcher to fire precision guided rockets and missiles to include Guided MLRS (GMLRS) and ATACMS/Brilliant Anti-Armor Submunition (BAT) Block II weapons.

The M270A1 upgrade starts with rebuilding the carrier and launcher loader module. The rebuilt M270 is then upgraded by adding the Improved Fire Control System (IFCS) and the Improved Launcher Mechanical System (ILMS) modifications. The IFCS will mitigate electronic obsolescence and will provide growth for future weapon systems. The ILMS will provide rapid response to time-sensitive targets by reducing the aiming time by 70 percent and reducing the reload time by 40 percent. The M270A1 upgrade launcher supports the Army Transformation by providing overmatch capabilities to the Counterattack Corps through 2020.

Length: 6832mm

Width: 2972mm

Weight: 24,756 kg

Range: 483 km

Average speed: 40 kph

Max speed: 56 kph

Crew: 3

Foreign Counterpart

Iraq: ABABEL 50, 100 (262mm, 400mm); Brazil: AVIBRAS/TECTRAN ASTROS II (127mm, 180mm, 300mm); Yugoslavia: ORKAN M87 (262mm); Israel: LAR-60 (160mm), MAR-350 (300mm) (350mm); Egypt: SAKR-80 (325mm); Russia (Union of Fed States): BM-22 (220mm), 9A52 (300mm); North Korea: M-1985 (240mm), M-1978 (170mm), M-1991 (240mm): China: WM-80 (273mm), WS-1 (320mm); Chile: RAYO (160mm).

Foreign Military Sales

Bahrain, Denmark, France, Germany, Greece, Israel, Italy, Japan, Korea, The Netherlands, Norway, Turkey, and the United Kingdom (M270 launcher and M26 basic rocket); Norway and Korea (M270A1 upgrade launcher and ER-MLRS rocket).

Program Status

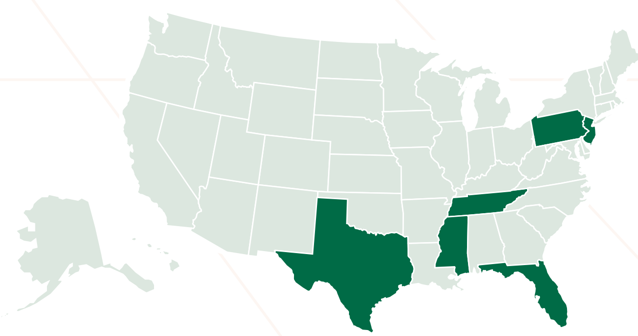
- **FY89** Beginning this year, MLRS has been co-produced by the United States, Germany, France, Italy, and the United Kingdom. A total of 857 launchers have been procured for the United States.
- **3QFY98** Initial procurement of the planned system improvement-M270A1 upgrade.
- **4QFY99** M270A1 program was restructured to add additional capability and to mature software prior to initial operational test and evaluation.
- **3QFY00** Delivered the first M270A1 low rate production launcher.
- **4QFY00** Completed the first M270A1 launcher live fire test.
- **1QFY02** Completed the M270A1 initial operational test.

Projected Activities

- **2QFY02** M270A1 Milestone III, full-rate production decision; M270A1 first unit equipped.

Prime Contractors

Lockheed Martin (Dallas, TX)



See appendix for list of subcontractors


"HIT-TO-KILL"

Mission

Provide defense of critical assets and maneuver forces belonging to the corps and to echelons above corps against aircraft, cruise missiles, and tactical ballistic missiles (TBMs).

Description and Specifications

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 (AMG), a communications relay group (CRG), and up to eight launching stations (LS).

The RS provides all tactical functions of airspace surveillance, target detection, identification, classification and tracking, and missile guidance and engagement support. The ECS provides the human interface for command control of operations. Each LS contains four ready-to-fire PAC-2, guidance enhanced missiles (GEM, GEM+) missiles sealed in canisters that serve dual purposes as shipping containers and launch tubes. PATRIOT's fast-reaction capability, high firepower, ability to track numerous targets simultaneously, and ability to operate in a severe electronic countermeasure environment are significant improvements over previous air defense systems.

The PATRIOT Advanced Capability-3 (PAC-3) upgrade program will incorporate significant upgrades to the RS and ECS, and will add the new PAC-3 missile, which utilizes hit-to-kill technology for greater lethality against TBMs armed with weapons of mass destruction. Additionally, up to 16 PAC-3 missiles can be loaded per launcher, increasing firepower and missile defense capabilities. The primary mission of the PAC-3 missile is to kill maneuvering and non-maneuvering TBMs. The system will also be able to counter advanced cruise missiles and aircraft threats. The PAC-3 upgrade program will comprise system improvements to increase performance against evolving threats, meet user requirements, and significantly enhance joint interoperability.

Foreign Counterpart

Russia: a combination of the SA-10 and SA-12.

Foreign Military Sales

The Netherlands, Germany, Japan, Saudi Arabia, Israel, Kuwait, and Greece are currently participating in PATRIOT acquisition programs. Discussions are ongoing with several other interested allies for acquisition of the PATRIOT system.

Program Status

Fielding of the basic PATRIOT system to U.S. forces is complete. The system is deployed in the continental United States, Europe, Korea, and Southwest Asia. U.S. missile production deliveries include PATRIOT Anti-tactical Ballistic Missile Capability-2 (PAC-2), the GEM and GEM+ and the PAC-3 missile.

The PAC-3 program consists of major upgrades to the radar, launcher, CRG, ECS, software, and other elements of the system in addition to the new missile (PAC-3 Missile). The major radar upgrade portion of the PAC-3 program is already in full-rate production. The PAC-3 missile has successfully conducted eleven test flights of TBM, cruise missile, and aircraft targets. The PAC-3 missile and associated ground components have entered low-rate initial production, and will be undergoing initial operational test and evaluation in this fiscal year.

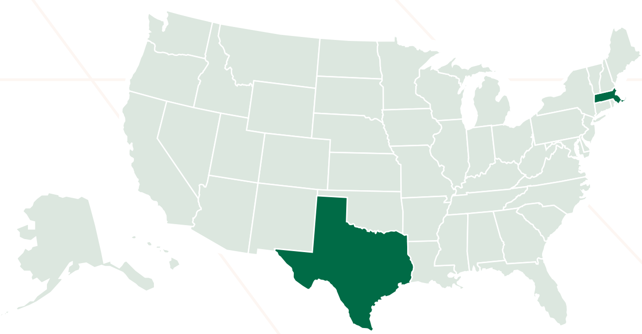
The fielded PATRIOT system will undergo recapitalization beginning in FY02, which will refurbish the aging fleet, turning the clock back on system components to 0 hours and 0 miles. The recapitalization program will synchronize with the PAC-3 upgrade program to ensure disruption to the forces' operational tempo is minimized.

Projected Activities

- Initial operational test and evaluation of the PAC-3 system with PAC-3 missile operational test flights.
- Missile Full Rate Production Decision.

Prime Contractors

Raytheon (Bedford, MA); Lockheed Martin (Grand Prairie, TX)



See appendix for list of subcontractors

Maintenance

The Army will maintain the systems already in place through repair or replacement of end items, parts, assemblies, and subassemblies that wear out or break. This category includes such items as the OH-58 Kiowa helicopter, the Palletized Load System, and other equipment whose useful life is being extended through continued maintenance, though not receiving further upgrades or recapitalization.

Armored Security Vehicle (ASV)

Armored Security Vehicle (ASV)

Mission
Support the military police (MP) missions of law enforcement, area security, battlefield circulation, and enemy prisoner-of-war operations in war and for operations other than war.

Description and Specifications
The Armored Security Vehicle (ASV) will be fielded to combat-support MP companies engaged in the above missions, as well as to heavy division MP companies. It is a turreted, light-armored, all-wheel drive vehicle that provides increased ballistic and landmine protection to the MPs. Its primary weapons are the 40mm MK-19 grenade machine gun and the M-2 .50 caliber machine gun. The fully enclosed turret includes a day/night sight for target acquisition. The vehicle provides all-around 7.62mm ball protection and 12.7mm armor piercing for the crew compartment, weapons station, and ammunition storage areas. Crew size for the ASV is three MPs, with a jump seat for a fourth soldier. The ASV carries up to 3360 lbs of payload and can be transported by a C-130.

The ASV provides overhead protection against 155mm at 15m and 12 lb TNT mines in the wheel wells. Other survivability enhancements include gas particulate-ventilated face pieces, a multi-salvo smoke grenade launcher, engine fire-suppression system, intercom with radio interface, transparent armor, and blackout capability.

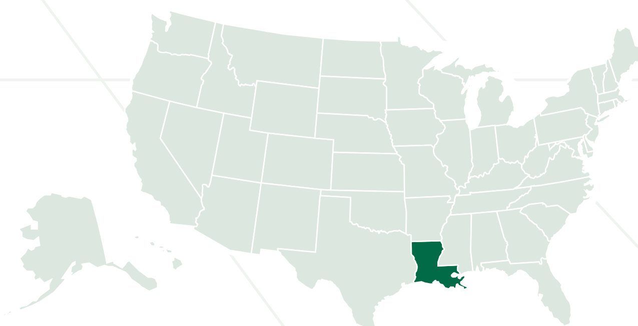
Foreign Counterpart
Germany: Theissen-Henschel; The Netherlands: DAF; France: Panhard.

Foreign Military Sales
None

Program Status
- 24 vehicles have been fielded.

Projected Activities
- Call-up of 4th program year.

Prime Contractors
Textron Marine & Land Systems (New Orleans, LA)



See appendix for list of subcontractors

Mission

Provide mobile, short-range air defense protection against cruise missiles, unmanned aerial vehicles, low-flying fixed-wing aircraft, and helicopters to divisions, armored cavalry regiments, separate brigades, and corps/theater air defense brigades.

Description and Specifications

The Avenger system is a lightweight, highly mobile and transportable surface-to-air missile/gun weapon system mounted on a High Mobility Multipurpose Wheeled Vehicle (HMMWV). It has a two-man crew and can operate in day or night and in clear or adverse weather conditions. The system incorporates a fully rotatable turret, operator's position with displays, fire control electronics, and standard vehicle-mounted launchers that support and launch multiple Stinger missiles. Avenger can be operated remotely up to 50 meters from the fire unit and can shoot on the move. A notable upgrade is the slew-to-cue (STC), embedded into a new Avenger fire control computer (AFCC), which accepts digital radar track data from external sources, then automatically slews the turret to place an aerial target into the gunner's sighting field of view. The AFCC, an approved Warfighting Rapid Acquisition Program (WRAP), corrects significant system obsolescence issues and allows for additional system growth at minimal costs.

Armament: Eight ready-to-fire Stinger missiles; .50-caliber machine gun

Sensors: Forward looking infrared (FLIR) sensor/laser range finder/optical sight

Chassis: Modified heavy HMMWV

Fire Control: Digital fire control computer/gyro-stabilized electronic turret

Foreign Counterpart

Russia: SA-9.

Foreign Military Sales

Taiwan, Egypt.

Program Status

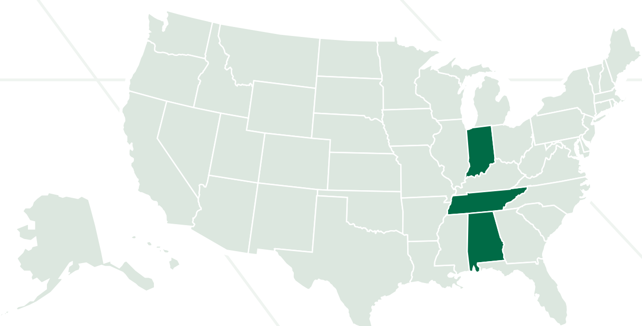
- Fielding slew-to-cue to the Counterattack Corps.
- Last Avenger production fire units now being delivered and will complete up-gunning of heavy battalions from 24-36 fire units.

Projected Activities

- Fleet retrofit of an Environmental Control Unit/Prime Power Unit (ECU/PPU) to be completed in FY03.
- Future program efforts to focus on legacy fleet sustainment by correcting critical system obsolescence.

Prime Contractors

Boeing (Huntsville, AL); AM General (South Bend, IN)



See appendix for list of subcontractors

Bradley Linebacker

Mission

Provide dedicated forward-area air defense for heavy-maneuver forces; engage and defeat a variety of threat platforms including rotary-wing aircraft, unmanned aerial vehicles, cruise missiles and fixed-wing aircraft.

Description and Specifications

The M6 Bradley Linebacker is a Bradley M2A2 Operation Desert Storm vehicle with a four-missile Stinger launcher (standard vehicle mounted launcher [SVML]) in lieu of the TOW missile launcher. With this modification, the crew can conduct a ground-to-air engagement while remaining under armor protection. The Linebacker also incorporates the Forward Area Air Defense Command and Control (FAAD C2) software on a handheld terminal unit. By integrating Global Positioning System (GPS) and FAAD C2, the Linebacker provides an automated slew-to-cue function.

Length: 21.5 ft

Width: 11.83 ft with armor tiles; 10.75 ft without armor tiles

Height: 11.8 ft

Weight: 60,000 lbs combat-loaded

Power train: 600 hp Cummins V093T diesel engine with GM-Allison HMPT-500-3 hydro-mechanical automatic transmission

Cruising range: 250 mi

Road speed: 38 mph

Crew: 4

Vehicle armament: 4 pod STINGER missile launcher; 25mm Bushmaster cannon; 7.62mm, M240C machine gun

Distribution: Air defense artillery battalions

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

- Digitization of fielded systems under way.
- Linebacker production completed.

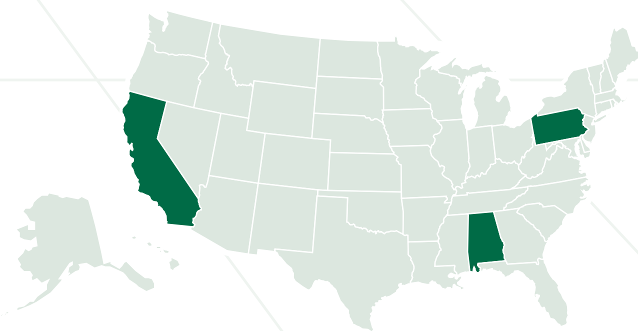
Projected Activities

- System sustainment.

Prime Contractors

Bradley M2A2ODS Chassis: United Defense, L.P. (York, PA; San Jose, CA)

Stinger Mission Equipment Package: Boeing (Huntsville, AL)



See appendix for list of subcontractors

Enhanced Position Location Reporting System (EPLRS)

Enhanced Position Location Reporting System (EPLRS)

Mission

Provide a mobile wireless data communications backbone for the Army's Tactical Internet; embedded situational awareness/position navigation; and a common system for Army, Air Force, Navy and Marine Corps warfighters.

Description and Specifications

The Enhanced Position Location Reporting System (EPLRS) supports the Army's Interim Brigade Combat Team (IBCT). EPLRS provides data distribution and position/navigation services in near-real-time for the warfighter at brigade and below level, in support of Battlefield Functional Area hosts and the Force XXI Battle Command Brigade-and-Below (FBCB2) program. EPLRS consists of a network control station and the EPLRS radio that can be configured as a manpack unit, a surface vehicle unit, and an airborne vehicle unit. EPLRS uses a time-division, multiple-access communications architecture to avoid transmission contention. In addition, it uses frequency hopping, error detection, and correction with interleaving. Spread spectrum technology provides jamming resistance.

EPLRS is interoperable with U.S. Air Force, Marine Corps and Navy. It is the Tactical Internet backbone and is used by ABCS and FBCB2 for situational awareness and command and control. Improvements to EPLRS include: message reliability, more efficient available bandwidth and field-programmable software.

Weight of the radio:

Vehicular: 40 lbs (as shown)

Manpack: 25 lbs

Foreign Counterpart

No known foreign counterpart

Foreign Military Sales

None

Program Status

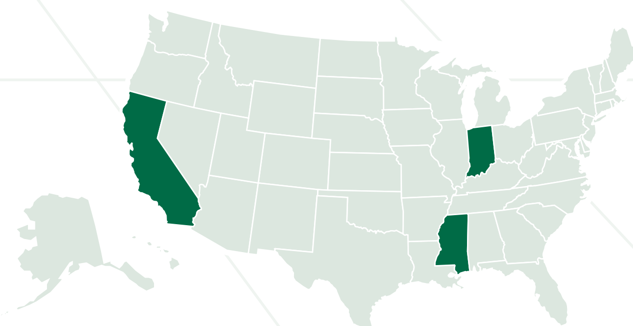
- **3QFY01** contract award for 1130 EPLRS radios.
- EPLRS Network Manager (ENM) progressed through several development milestones including critical design review. An ENM government operational test is on schedule for 4QFY02.
- Fielding ongoing to the IBCT at Ft. Lewis, WA. Fielded 600 to date.
- **4QFY01** EPLRS participated in the Division Capstone Exercise (DCX 1 and 2) with 500 radios in the network.
- **1QFY02** EPLRS participated in FBCB2's limited user test (LUT 2a).

Projected Activities

- **4QFY02** EPLRS will participate in FBCB2 Field Test 5 (FT5).
- **4QFY02** EPLRS contract award.
- **4QFY02** EPLRS will participate in Millennium Challenge.
- **4QFY02** EPLRS Operational Assessment EPLRS Network Manager (ENM).
- **1QFY03** will participate in FBCB2 IOTE.

Prime Contractors

Raytheon (Fullerton, CA; Forest, MS; Fort Wayne, IN)



See appendix for list of subcontractors


C-20/37
RC-12
C-12
UC-35
C-26
RC-7
C-23

Mission

Provide the Army with high priority cargo and personnel transport capability within a tactical area; provide platforms for communications and surveillance equipment.

Description and Specifications

The Fixed Wing fleet consists of eight aircraft platforms and nearly 300 aircraft that allow the Army to perform day-to-day operations in a more timely, cost efficient manner without reliance on commercial transportation alternatives. The fleet includes the RC-7B Aerial Reconnaissance Low (ARL); C-12 Utility; RC-12 Guardrail Common Sensor (GRCS); C-20/C-37 Executive Jets; C-23 Cargo; C-26 Utility; and UC-35 Utility aircraft. The RC-7B and RC-12 are classified as Special Electronic Mission Equipment (SEMA) and provide real time intelligence collection in both peace and wartime environments. The C-12, C-23, C-26 and UC-35 are classified as Operational Support Aircraft and provide direct fixed wing support to warfighting CINCs word-wide. The C-20 and C-37 (Gulfstream Executive Jets) stationed at Andrews Air Force Base are classified as Senior Support Aircraft for designated support of the Chief of Staff and Service Secretary.

	RC-7	C-12/RC-12	C-20/37	C-23	C-26	UC-35
Platform	DeHavilland Dash 7	Beech King Air 200	Gulfstream	Sherpa	Metro Liner	Cessna Citation
Propulsion	PT6A-50	PT6A-41/42/67	Rolls Royce	PT6A-65AR	Garrett TPE331-12	JT15D or PW535A
Ceiling	25,000	31,000/35,000	45,000	20,000	25,000	45,000
Speed	110 (loiter) 220 (Cruise)	260 kts	459 kts	180 kts	260 kts	415 kts
Max Weight	47,000 lbs	12,500/16,500	74,600/95,000	25,600	16,500	16,500
Range	1500nm	1454/1000	4220/5500 nm	900nm	1500nm	1500nm
Passengers	N/A	6 to 8	12 to 14	30	20	8

Foreign Counterpart

All Army fixed wing aircraft are commercial-off-the-shelf (COTS) products or developed from COTS products.

Foreign Military Sales

Egypt has signed a Letter of Offer and Acceptance (LOA) for maintenance services on the Beechcraft-200 (C-12) aircraft. The LOA was implemented August 27, 1996 with a case value of $2.8M.

Greece has signed a LOA for two Beechcraft-200s (C-12), plus modifications. The LOA was implemented 2 July 1999 with an initial case value of $17M.

Israel signed a LOA for eight Beechcraft-200s (C-12), plus modifications, with an option to purchase four additional aircraft. The LOA was implemented 16 May 2001, with an initial case value of $55M.

Program Status

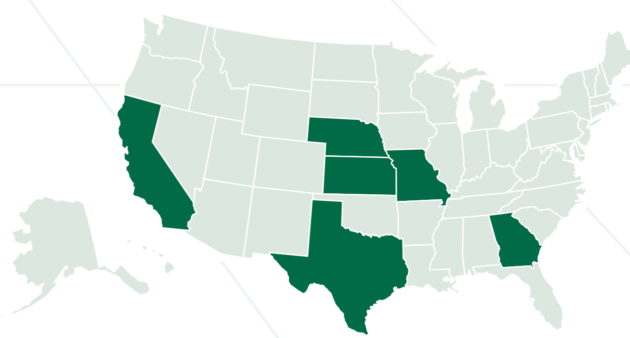
- UC-35 and RC-7 are only aircraft in production. All UC-35s purchased to date with congressional plus-up funding.
- C-12, RC-12 and UC-35 aircraft utilizing a life cycle contractor support (LCCS) maintenance contract (DynCorp).

Projected Activities

- Headquarters Department of the Army directed HUB effort that will locate aircraft at centralized locations to reduce sustainment costs and increase efficiency to the Army.

Prime Contractors

Cessna Aircraft (Wichita, KS); Raytheon-Beechcraft (Wichita, KS); Shorts Brothers (Belfast, Ireland); Fairchild (San Antonio, TX); De Havilland Aviation (Canada); Gulfstream (Savannah; GA), DYNCORP (Ft. Worth, TX); Duncan (Lincoln, NE); AVTEL (Mojave, CA); Saberliner (St. Louis, MO)



See appendix for list of subcontractors

Kiowa Warrior (Legacy Force)

Mission
Conduct armed reconnaissance, security, target acquisition and designation, command and control, light attack and defensive air combat (defensive) missions in support of combat and contingency operations.

Description and Specifications
The Kiowa Warrior is the Army's rapidly deployable, lightly armed reconnaissance helicopter. The Kiowa Warrior includes advanced visionics, navigation, communication, weapons and cockpit integration systems. The mast-mounted sight (MMS) houses a thermal imaging system, low-light television, and a laser rangefinder/designator. These systems allow target acquisition and engagement at stand-off ranges and in adverse weather conditions. The Kiowa Warrior's highly accurate navigation system provides precise target location that can be sent digitally to other aircraft or artillery via its advanced digital communications system. Battlefield imagery can be transmitted to provide near-real-time situational awareness to command and control elements.

The Kiowa Warrior is rapidly deployable by air and can be fully operational within minutes of arrival. The armament systems combine to provide anti-armor, anti-personnel, and anti-aircraft capabilities at standoff ranges. Although Kiowa Warrior fielding is complete, the Army is currently installing a series of safety and performance modifications to keep the aircraft safe and mission effective until it is retired.

Max gross weight: 5200 lbs

Max speed: 118 kt clean; 113 kt armed

Crew: 2

Armament: Air-to-air Stinger (ATAS) (2 round launcher); .50 caliber machine gun (500 rounds); HYDRA 70 (2.75 in) rockets (7-shot pod); HELLFIRE missiles (2-round launcher)

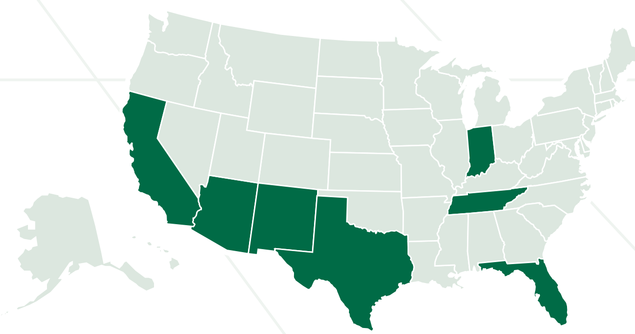
Foreign Counterpart
France: Gazelle, Allouette; Germany: BO-105; Russia: Hind, Hip, Hoplite.

Foreign Military Sales
Taiwan: Delivery of 26 Kiowa Warriors completed. Thirteen additional aircraft requested as amendment to the existing foreign military sales case.

Program Status
- **2QFY97** Initiated safety enhancement program (SEP) (installation of safety and performance enhancements).
- **2QFY99** Completed OH-58D retrofit program.
- **1QFY00** Completed initial Kiowa Warrior fielding.
- **2QFY01** Awarded contract for SEP Lot IV (22 aircraft).
- **1QFY02** Award SEP lot V contract (22 aircraft).

Projected Activities
- **2QFY08** Begin retirement of Kiowa Warriors as the Army fields RAH-66 Comanche.
- **1QFY09** Return last SEP-modified aircraft to the field.

Prime Contractors
Rolls Royce/Allison Engines (Indianapolis, IN); Honeywell (Albuquerque, NM); Bell Helicopter, Textron (Fort Worth, TX); Boeing (Anaheim, CA); Simula (Tempe, AZ), Edwards (Bristol, TN)



See appendix for list of subcontractors

Maintenance

Nuclear, Biological and Chemical Reconnaissance System (NBCRS)–Fox

Mission

Detect, identify, and mark areas of nuclear and chemical contamination; sample for nuclear, biological, and chemical (NBC) contamination; and report accurate information to supported commanders in real time.

Description and Specifications

The Nuclear, Biological and Chemical Reconnaissance System (NBCRS)-Fox Block I Modification (M93A1) contains an enhanced NBC sensor suite consisting of the M21 Remote Sensing Chemical Agent Alarm (RSCAAL), MM1 Mobile Mass Spectrometer, Chemical Agent Monitor/Improved Chemical Agent Monitor (CAM/ICAM), AN/VDR-2 Beta Radiac, and M22 Automatic Chemical Agent Detector/Alarm (ACADA). The NBC sensor suite has been digitally linked with the communications and navigation subsystems by a dual-purpose central processor system known as the Multipurpose Integrated Chemical Agent Detector (MICAD). The MICAD processor fully automates NBC warning and reporting functions and provides the crew commander with full situational awareness of the Fox's NBC sensors, navigation, and communications systems. The M93A1 Fox is also equipped with an advanced navigation system Global Positioning System (GPS) and Autonomous Navigation System (ANAV) that enables the system to accurately locate and report agent contamination. The mobility platform is a six-wheeled, all-wheel-drive armored vehicle capable of cross-country operation at speeds up to 65 mph.

The Fox System is fully amphibious with swimming speeds up to six mph. As a reconnaissance vehicle, it can locate, identify and mark chemical/biological agents on the battlefield. The Fox usually accompanies the scouts or motorized reconnaissance forces when performing its NBC mission. It has an over-pressure filtration system that permits the crew to operate the system in a shirt-sleeve environment that is fully protected from the effects of NBC agents and contamination.

The M93A1 system is operated by a three-person crew (legacy systems require a four-person crew). The M93A1 will be one of the few systems fielded with a fully interactive class 4/5 electronic technical manual (IETM). The IETM is a single multimedia CD that contains the twelve-manual library and is structured to incorporate advanced diagnostics that support the system.

The Block II Modification to the sensor suite will incorporate biological and on-the-move standoff chemical agent detection. The sensor suite's chemical biological mass spectrometer (CBMS) will improve the detection and identification of liquid chemical agents. An open architecture approach for sensor suite integration will enable expansion/upgrade of sensors and on-board computers at minimal cost as well as significant improvements in NBC reconnaissance reporting and situational awareness for commanders. The Block II sensor suite will be integrated into the Interim Armored Vehicle Nuclear, Biological and Chemical Reconnaissance Vehicle.

Foreign Counterpart

China: NBC reconnaissance vehicle; Russia: BRDM-ZRKH, MTLB, RKHM, UAZ-469RKH; Germany: ABC Reconnaissance System.

Foreign Military Sales

None

Program Status

Block I:

- **3QFY96** Awarded production contract for the Block I modification.
- **1QFY99** First unit equipped.
- **1QFY02** Fielding of 64 systems complete.
- **FY96-02** Continue production of NBCRS Block 1 modification (M93A1); Approximately 97 legacy Fox systems planned in this conversion.

Block II:

- **2QFY00** System development and demonstration phase initiated.

Projected Activities

Block I:

- **3QFY03** Complete fielding of the last Block I modification.

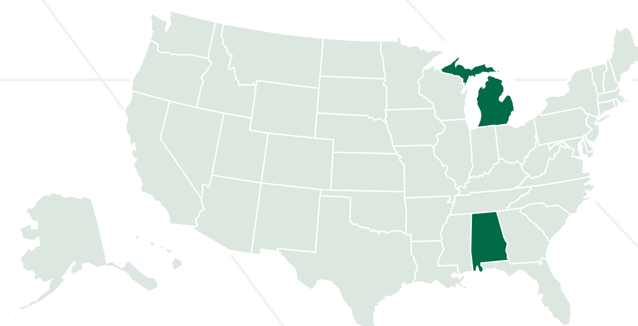
Block II:

- **FY03** Production qualification test and limited user test.

Prime Contractors

Block I: General Dynamics (Detroit, MI; Anniston, AL); Henschel Wehrtechnik (Kassel, Germany)

Block II: General Motors Defense and General Dynamics (London, ONT, Canada; Detroit, MI)



See appendix for list of subcontractors

Mission
Provide the primary artillery support for armored and mechanized infantry divisions.

Description and Specifications
The M109A6 (Paladin) howitzer is the most technologically-advanced self-propelled cannon system in the U.S. Army. The “A6” designation identifies several changes to the standard model that provide improvements to weapon survivability, responsiveness, reliability, availability and maintainability, armament and terminal effects.

The fire control system is fully automated, providing accurate position location, azimuth reference and on-board ballistic solutions of fire missions. The howitzer has a servo-driven, computer-controlled gun drive with manual backup. Paladin uses state-of-the-art components to achieve dramatic improvements in the following:

Survivability: “Shoot and scoot” tactics; improved ballistic and nuclear, biological and chemical protection.

Responsive fires: Capable of firing within 45 seconds from a complete stop with on-board communications, remote travel lock and automated cannon slew capability.

Accurate fires: On-board POSNAV and technical fire control.

Extended range: 30 km with HE RAP and M203 propellant.

Increased reliability: Improved engine, track, and diagnostics.

Upgrades include: Global positioning system-aided self-location, M93 Muzzle Velocity System, and commercial off-the-shelf-based computer processor.

Other Paladin specifications include the following:

Max unassisted range: 22,000 m

Max assisted range: 30,000 m

Min range: 4000 m

Max rate of fire: 4 rounds/minute for three minutes

Sustained ROF: 1 round/minute (dependent on thermal warning device)

Max speed: 38 mph (61.1 Kph) (highway)

Crew size: 4 (accompanying M992 FAASV-5)

Weight empty (approx.): 56,400 lbs (25,605.6 Kg)

Weight combat loaded (approx.): 63,615 lbs (28,881.21 Kg)

Foreign Counterpart
No known foreign counterpart

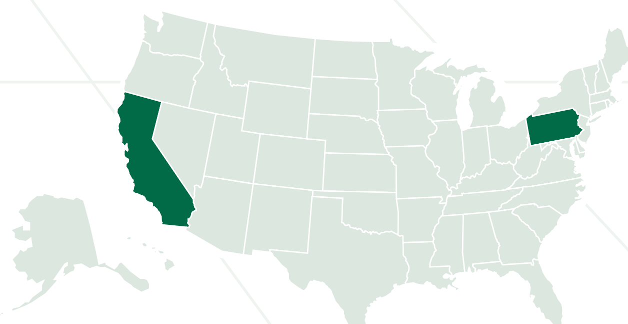
Foreign Military Sales
None

Program Status
- **1993** First unit equipped; Complete fielding to Active Army 1998
- Awarded FY00 ARNG Production Contract.
- **FY01** completed fielding to 18 National Guard Battalions; Completed fielding of first two battalions of the Enhanced Display System to the First Digital Division; Awarded Electronic Systems Technical Support (ESTS) contract to TRW.

Projected Activities
- Award a modification for additional ARNG production.
- Develop V.7 software improvements.
- Develop Paladin Digital Fire Control Systems (PDFCS).

Prime Contractors
United Defense, L.P. (York, PA)

TRW (Carson City, CA)



See appendix for list of subcontractors

Palletized Load System (PLS)

Palletized Load System (PLS)

Mission
Perform line and local haul, unit resupply and related missions in both operational and tactical environments (corps/brigade areas of operation) in support of legacy-equipped, digitized and transformation force combat units.

Description and Specifications
The Palletized Load System (PLS) consists of a prime mover (10 x 10 ft configuration), equipped with an integral load-handling system providing self-load/unload capability, and capable of transporting a 16.5-ton payload. PLS carries equipment/ammunition/supply loads on demountable "flatrack" cargo beds, 8 x 8 x 20 ft International Standards Organization (ISO) containers, or shelters, and is able to tow a 16.5-ton payload trailer that is also capable of carrying flatracks. Two additional pieces of equipment enhance PLS flexibility.

The containerized roll-in/out platform (CROP) is an A-frame type flatrack which fits inside a 20-ft ISO container. A container handling unit (CHU) enables PLS to pick up and transport ISO containers without using a flatrack. Flatracks and CROP are interchangeable between PLS and the HEMTT-LHS. The PLS prime mover features a central tire inflation system that significantly improves off-road mobility. Current NATO agreements require PLS to maintain interoperability with comparable British, German and French systems through the use of a common flatrack. PLS is a major enabler in the Army's drive to achieve a distribution-based logistics system.The PLS-Enhanced (PLS-E) program procures the Movement Tracking System (MTS), which provides a multitude of tactical wheeled vehicles with Global Positioning System (GPS) capability and two-way digital messaging. PLS has been chosen to be the Resupply Vehicle (Wheeled) for the Crusader system.

Truck payload: 16.5 tons

Trailer payload: 16.5 tons

Flatrack dimensions: 8 x 20 ft

Engine type: Diesel

Transmission: Automatic

Number of driven wheels: 10

Range: 300 mi

Air transportability: C-17, C-141, C-5

Foreign Counterpart
United Kingdom: Demountable Rack Off-Loading and Pick-Up System.

Foreign Military Sales
None

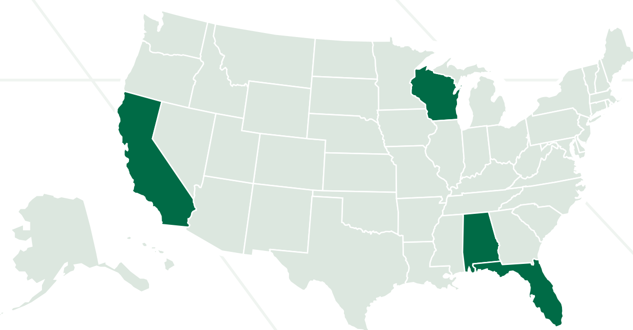
Program Status
- Approximately 3553 PLS trucks, 2253 PLS trailers, 5000 common flatracks, 5409 CROPs, and 269 CHUs have been fielded to date.
- In **FY01** PLS was fielded to the Forward Support Battalions of the Digitized Divisions as a component of the Forward Repair System, and to Corps Engineer units as a component to Engineer Mission Modules (including dump body, bituminous distributor, and concrete mobile mixer) PLS Trailers were fielded to Brigade Support Battalions of the Brigade Combat Team.

Projected Activities
- **FY02** Continue fielding of PLS trucks, trailers, CROPs, CHUs and PLS-E.
- Continue development of petroleum distribution support (3000-3500 gallon fuel racks for retail supply and quartermaster fuel farm).
- Continue development of a trailer container transfer kit that allows PLS trailers to accept containers from the PLS/CHU without the use of a flatrack.

Prime Contractors
Truck and CHU: Oshkosh Truck (Oshkosh, WI)

Trailer and Flatrack: Oshkosh Truck (Bradenton, FL)

CROP: Summa Technologies (Huntsville, AL); Hyundai Precision America (San Diego, CA)



See appendix for list of subcontractors

MK19-3

M249

M16

M4

M240B

Mission

Deter and, if necessary, compel adversaries by enabling individuals and small units to engage targets with accurate, lethal, direct fire.

Description and Specifications

M16A2 Rifle: A lightweight, air-cooled, gas-operated rifle. An improved version of the M16A1, the M16A2 incorporates improvements in iron sight, pistol grip, stock and overall combat effectiveness. Accuracy is enhanced by incorporating an improved muzzle compensator, three-round burst control, and a heavier barrel; and by using the heavier NATO-standard ammunition, which is also fired by the squad automatic weapon.

M16A4 Rifle: An M16A2 rifle with a flat-top upper receiver accessory rail and a detachable handle/rear aperture sight assembly.

M4 Carbine: A compact version of the M16A2 rifle, with a collapsible stock, a flat-top upper receiver accessory rail and a detachable handle/rear aperture sight assembly. The M4 enables a soldier operating in close quarters to engage targets at extended range with accurate, lethal fire. It achieves more than 85 percent commonality with the M16A2 rifle and will replace all .45 caliber M3 submachine guns, selected M9 pistols, and M16 series rifles.

Modular Weapon System (MWS): The MWS is a system of accessory rails mounted in place of the forward hand guards on M16A4 rifles and M4 carbines. These permit the no-tools, field attachment of day or night sights, aiming lights, flashlights, ancillary weapons, and other accessories, based upon mission specific requirements.

M249 Squad Automatic Weapon (SAW): The M249 is a lightweight, gas-operated, one-man-portable automatic weapon capable of delivering a large volume of effective fire at ranges up to 800 meters. Two M249s are issued per infantry squad. It is scheduled to replace the M60 7.62mm medium machine gun in certain units.

M240B Medium Machine Gun: The M240B is a ground-mounted, gas-operated, crew-served machine gun. This reliable 7.62mm machine gun delivers more energy to the target than the smaller caliber M249 SAW. It will be issued to infantry, armor, combat engineer, special force/rangers and selected field artillery units that require medium support fires and will replace the ground-mounted M60 series machine guns currently in use.

MK19-3 40mm Grenade Machine Gun: A self-powered, air-cooled, belt-fed, blowback-operated weapon, the MK19-3 is designed to deliver decisive firepower against enemy personnel and lightly armored vehicles. It is scheduled to replace selected M2 heavy machine guns in selected units and will be the primary suppressive weapon for combat support and combat service support units. The MK19-3 is mounted on the HMMWV, M113 FOV, 5-ton trucks, and selected M88A1 recovery vehicles.

	M4	M16A2/A4	M249	M240B	MK19-3
Caliber:	5.56mm	5.56mm	5.56mm	7.62mm	40mm
Weight:	*7.5 lbs	*8.8 lbs	16.5 lbs	27.6 lbs	72.5 lbs
Max Effective Range:	600 m at**	800 m/600 m at	1000 m at	1,800 m at	2,200 m at
	500 m pt**	550 m pt	600 m pt	800 m pt	

*Loaded weight with sling and one magazine only. **(**at:** area target, **pt:** point target)

Foreign Counterpart

Numerous

Foreign Military Sales

Numerous foreign countries purchase U.S. small arms.

Program Status

MWS:

- **FY98** Materiel release.
- **1QFY99** First unit equipped.

M16A2:

- **FY97** Completed Army procurement.
- **FY02** Final Deliveries scheduled.

M16A4: 2QFY99 First unit equipped (FUE); In production to fulfill modular rifle requirements.

M4: 2QFY97 FUE; In production.

M240B: In production.

Mk19: In production.

M249: In last year of production.

Projected Activities

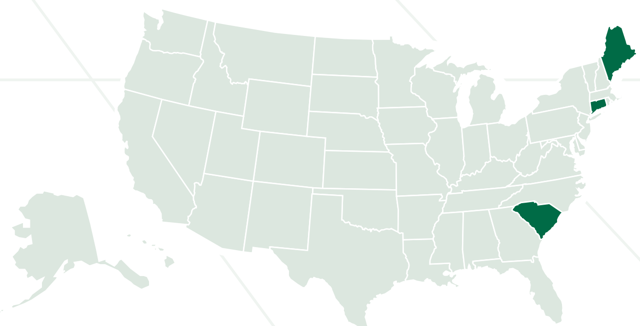
- FY01 was the last funded year of M249 SAW production. The Army Procurement Objective (APO) will be increased by 9580 weapons, an unfunded quantity.

Prime Contractors

M4 Carbine: Colt's Manufacturing (Hartford, CT)

M16A4, M249 Squad Automatic Weapon, and M240B Medium Machine Gun: FN Manufacturing (Columbia, SC)

MK19-3 Grenade Machine Gun: General Dynamics (Saco, ME)

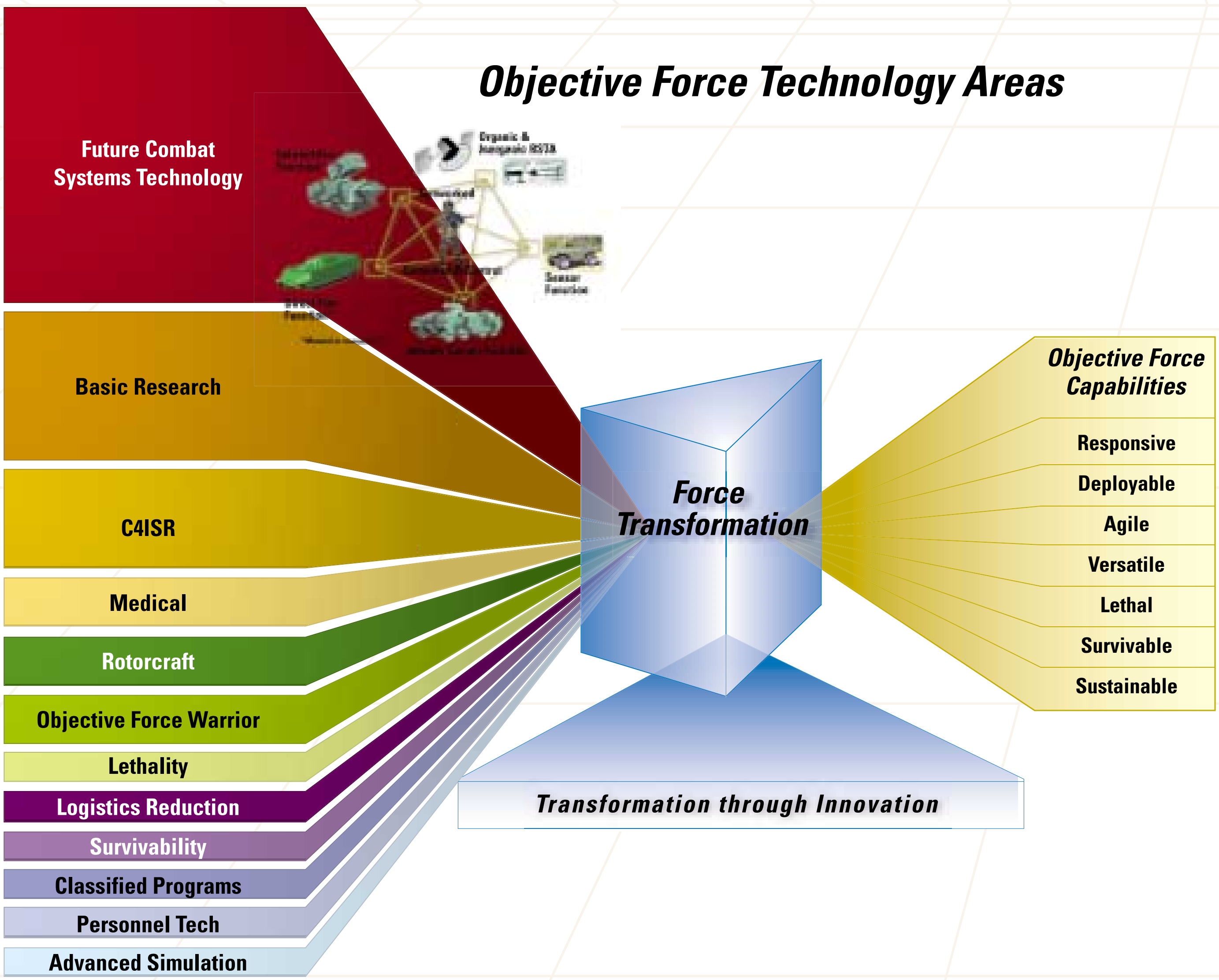


See appendix for list of subcontractors

Science and

Science and Technology

Objective Force Technology Areas



Technology

The Army Science and Technology (S&T) community is focused on pursuing technologies that will enable the Objective Force. The Army Materiel Command (AMC) executes nearly 70 percent of the Army's S&T program. The AMC has reshaped its S&T program to enable the needs of the Objective Force. Most importantly, it is developing technologies for the Future Combat Systems (FCS). To develop, buy, and maintain systems for the Army (and other services), AMC works closely with industry, colleges and universities, and other government agencies to ensure state-of-the-art technology and operational support to implement the national military strategy.

We articulate The Army's S&T investments in terms of Objective Force technology areas and 95 percent of S&T funding is oriented toward the Objective Force. The chart at left depicts these technology areas in color bands that are proportional to the investments within each area. The S&T section in this handbook is organized by these Objective Force technology areas. This section begins with FCS and ends with Advanced Simulation. Within each technology area, key Science and Technology Objectives (STOs) will be described in the following section.

Full details on The Army's Science and Technology program and the 171 STOs are described in The Army Science and Technology Master Plan (ASTMP). The ASTMP may be obtained from the Defense Technical Information Center (DTIC) at www.dtic.mil/dtic/prices.

Future Combat Systems (FCS)

Future Combat Systems (FCS) is the Army's top-priority S&T program. The FCS is a system-of-systems capability—an ensemble of fighting capabilities that meet the weight and volume constraints for C-130 transportability. This is essential to achieve the strategic responsiveness required in the Army Vision. As a joint Army/Defense Advanced Research Projects Agency (DARPA) program, FCS will use a combination of industry and government studies, conceptual designs, and technology developments that will provide capabilities to meet the Army's Objective Force needs.

FCS will be a multi-functional, multi-mission, reconfigurable system-of-systems designed to maximize joint interoperability, strategic transportability and commonality of mission roles, including direct and indirect fire, air defense, reconnaissance, troop transport, counter-mobility, non-lethal fire and C2 on-the-move.

The FCS Science and Technology Objective (STO) will develop technologies to provide revolutionary lethality through advanced direct, indirect and air defense subsystems, as well as increased agility using integrated advanced propulsion technologies such as electric drive/suspension, hybrid electric power, or fuel cells/reformers.

FCS will have revolutionary survivability for 20-ton class vehicles using a combination of innovative lightweight armors, active protection systems, signature management and new structural designs. FCS will seek to reduce up to 90 percent of logistic/sustainment demands by effectively integrating technologies to reduce platform size, weight, fuel consumption and manning requirements. FCS will also have embedded training and battle rehearsal capability to reduce the total systems logistical footprint.

In February 2000, the Army and DARPA established a Memorandum of Agreement (MOA) to collaboratively develop the FCS. The program is co-funded by the Army and DARPA. The program activities include:

- FCS first-order design and concept of operations definition, with accompanying validation using modeling and simulation and surrogate exercises
- A detailed FCS design to a level suitable for transition to system development and demonstration.

DARPA leads the program. In September 2001, the Army established a Program Office under the Program Executive Officer, Ground Combat Systems. The Army has scheduled the FCS Milestone B decision in the third quarter of fiscal year 2003. In February 2002, DARPA awarded a contract to establish the FCS Lead Systems Integrator responsible for designing, developing, producing, fielding and supporting the FCS system-of-systems.

Advanced Technology Demonstrations (ATDs) are major systems and component level demonstrations designed to "prove" the technical feasibility and military utility of a technology. ATDs are also designated as Army STOs which are used to provide HQDA visibility of the Army's key S&T programs.

Networked System-of-Systems

Investment Strategy - Focus S&T on Objective Force

- Promote Innovative, high payoff solutions
- Add resources to reinforce success
- Embark on new ways to manage risk
- Exploit opportunities for partnership
- Accelerate technology where feasible

Following are some of the Army STOs that will enable FCS capabilities.

Multi-Role Armament and Ammunition System (MRAAS) ATD

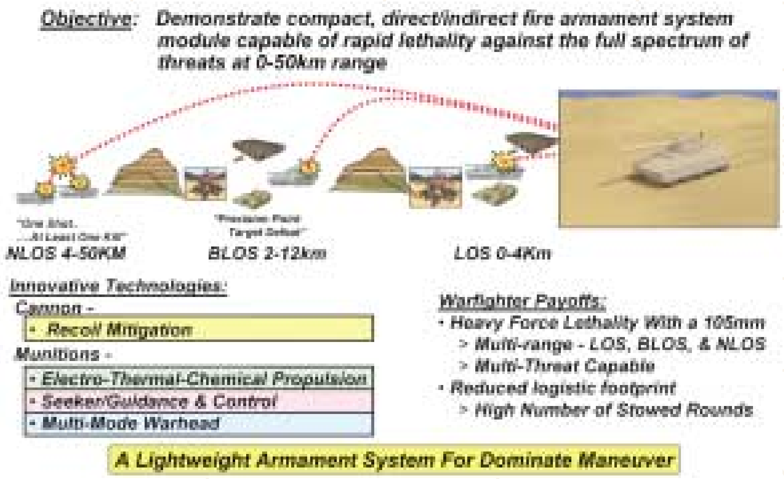
Developing and fielding an FCS Multi-Role Armament System with complementing ammunition suite will provide a diverse lethality system capable of defeating the full spectrum of threats. It will enable rapid engagement of direct and indirect targets from the same platform. The system will maximize mission flexibility via a common cartridge-based munition family, with precision lethality to reduce the overall armament system and munition logistics demands.

The two-round smart ammunition suite with improved hit-and-kill probability will result in an increase of first round effects on target, thereby increasing the number of stowed kills. In addition, dynamic re-targeting will take advantage of information from the digitized battlefield. Multi-purpose warhead development will provide a defeat capability against the full spectrum of threats, both moving and stationary, and a robust direct-fire defeat mechanism will provide superior lethality against a full spectrum of future threat armor.

The technologies advanced under this ATD will address and meet these challenges: Electrothermal-Chemical (ETC) technology, composite materials and propellant optimizations for a low-impulse/lightweight launcher that will provide increased energy-on-target and a versatile propulsion system for multi-function munition packages.

Novel kinetic energy (KE) penetrator technologies will provide defeat capability of heavy armors at 0–4 km. Dynamic re-targeting through in-flight updates will take advantage of reduced target location error while maintaining affordability, high precision kill and high-G capability. Advanced composite structures and smart materials will provide extended range capabilities while reducing cartridge volume and weight. Smaller warheads that retain or increase lethality against all targets will result from advances in munition design, liner materials, and alternate explosives and fusing.

Multi-Role Armament & Ammunition ATD



For Block I FCS, a medium range munition (MRM) will be developed to project lethality in the 8-10 km range. MRM is a guided, multi-purpose round that will provide 120mm lethality with a lighter 105mm gun. MRM leverages prior S&T work in smaller, more lethal compact-shape-charge warheads; semi-active laser-seekers; millimeter wave radar; and imaging infrared sensors. MRM will defeat heavy armor and light armored targets, bunkers, buildings, helicopters and dismounted troops. Logistics burden will be reduced by fewer rounds required for target defeat, and survivability will be improved by providing standoff target defeat.

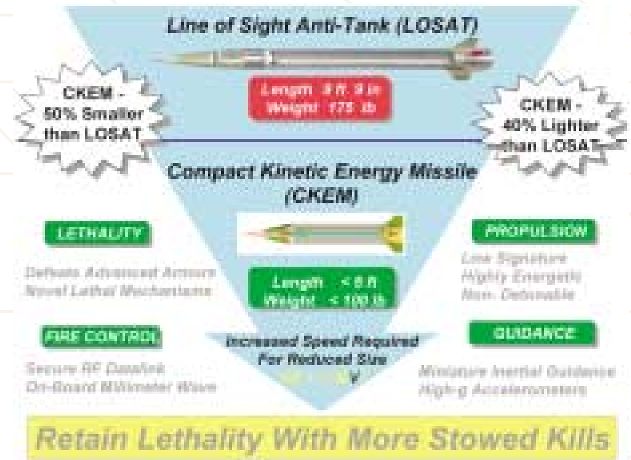
Compact Kinetic Energy Missile Technology ATD

The Compact Kinetic Energy Missile (CKEM) will provide FCS and the Objective Force with a revolutionary hypervelocity kinetic energy weapon to deliver overwhelming lethality against present and future threats. The CKEM weapon system must provide overwhelming lethality at almost half the mass and size of the current kinetic energy missile to significantly improve versatility in the Objective Force.

CKEM will also defeat explosive reactive armor (ERA) 1–3 and threat active protection systems by using a lighter, smaller, faster, kinetic energy (KE) missile and will significantly increase the number of KE stowed kills. The CKEM's system-level performance goals include the following:

- Total missile length: less than 5 ft
- Total missile weight: threshold less than 100 lbs, objective 65 lbs
- Range: overwhelming lethality at 0.4–5 km, with greater percentage kill of any current KE weapon at close-in engagements of less than 200 meters and extended range of 5–8 km
- Penetrator energy: ≥10 MJ at all ranges.

The following technologies are critical to successfully accomplishing the system performance goals and objectives: high-energy density, insensitive propulsion, enhanced lethality and hypervelocity guidance technology.



Ballistic Protection for FCS

Advanced frontal armors are needed to protect against large-caliber KE penetrators conditioned by active protection systems (APS), medium-caliber KE penetrators, and hand-held infantry weapons that cannot be countered by APS. Structural armor is needed to protect against heavy machine guns and overhead artillery. The objectives for entry into the system development and demonstration phase of FCS are a weight of 80 lbs per square foot for frontal armor, and 20 lbs per square foot for structural armor.

This program addresses these challenges by combining several passive and energetic armor technologies, including the use of advanced ceramics, composite materials, lightweight high-strength metals and possibly energetic materials and electromagnetic defeat mechanisms.

FCS Mine Detection and Neutralization

The FCS mine detection and neutralization effort will provide the warfighter with enhanced operational tempo (rates-of-advance) during route clearance and mine avoidance missions, increased vehicle survivability and enhanced soldier survivability. The objective of this effort is to investigate, develop and evaluate forward-looking

Science and Technology

sensor technologies, signal processing techniques and mine neutralization techniques applicable to detecting and neutralizing on/off-route surface and buried antitank mines. Forward-looking mine detection goals involve detecting and locating mines at distances of 10–30 meters in front of the host vehicle, at speeds of 15–20 kph. Mine neutralization goals include the following:

- Probability of kill = 90–95 percent
- Standoff: 10–50 meters
- Rate of advance: 10–20 kph with low-order detonation.

FCS mine detection and neutralization will be designed as a modular system for bolt-on integration onto FCS vehicle platforms, avoiding the need for specialized overpass vehicles and following confirmation sensors. This program also will pay particular attention to total life-cycle costs, sustainability and maintainability. Sensor and neutralization technology will transition to advanced development and insertion into demonstration and acquisition programs. The program supports FCS, the Mounted Battle Lab, the Maneuver Support Battle Lab, and the Engineer School and Center.

Semi-Autonomous Robotics for FCS

The Semi-Autonomous Robotics for FCS program will focus on the development of the perception and control "intelligence" required to permit vehicles to "roam" throughout the maneuver battlespace without substantial operator intervention.

This effort began by using the ongoing Army/OSD Demo III program to look at an array of active and passive sensor models across the electromagnetic spectrum (including radar, laser radar (ladar), visible electro-optical and infrared imaging) for the detection and classification of objects that may impact vehicle mobility. The development of methodologies to gain rapid, distant detection of obstacles below the ground plane (e.g., holes and ruts), including foliage-penetrating radar and ladar, will be emphasized.

In October 2001, the program demonstrated baseline cross-country mobility at speeds of up to 20 mph (day) in challenging terrain with obstacles above and below the ground plane. Current challenges include development of reliable day/night autonomous mobility capabilities that will enable an unmanned vehicle to maneuver at speeds of up to 50 percent of the speed attained by a manned High Mobility Multipurpose Wheeled Vehicle (HMMWV) in similar terrain. By the conclusion of this effort in October 2005, the Army will have developed technology for the effective operation of unmanned systems in a tactical environment. This program supports FCS future improvements, beyond Block I.

Advanced Night Vision Goggles (ANVG) ATD

The focus of this program is to develop and demonstrate an integrated 100° field of view (FOV) helmet-mounted night vision goggle system. The ANVG technology will significantly increase individual soldier capabilities under adverse weather and military operations in urban terrain (MOUT) conditions within the FCS system. The ANVG will provide an ultra-wide 40°x100° FOV with better than 50 percent improvement over current goggle performance, and an integrated heads-up display for in-platform applications. Low halo tube technology will provide more effective navigation and improved safety in MOUT operations. The ANVG will be a modular Horizontal Technology Integration (HTI) design that can also meet requirements for Mounted Warrior and Land Warrior (LW), allowing head mounting for night driving, navigation or handheld weapon use. Additionally, for the dismounted application, an uncooled forward-looking infrared (FLIR) camera will be added to the helmet-mounted assembly that will provide thermal image insert to the image intensifier to enhance target detection performance and complement the IR performance.

Recent developments include:

- Performed human interface study, completed system design and initiated uncooled FLIR design tradeoffs; conducted IR tube process development (FY00).
- Completed IR tube development with 20/30 high-light-level and 20/85 low-light-level resolution for integration into system (FY01).

Projected activities include:

- Conduct user evaluations in aircrew applications and qualification of the critical IR tube and transition to PM-NV/RSTA for SDD/LRIP program; conduct user assessment of performance - human interface/cost tradeoffs for reduced FOV configurations for ground applications. Adapt FLIR camera development for dual-spectrum sensor capability (FY02).

- Complete FLIR camera integration and conduct ground user assessment tests (FY03).

Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR)

Research and technology in the areas of C4ISR is designed to enable comprehensive situational awareness for the Objective Force. It includes advanced sensors and sensor processing, intelligence and electronic warfare systems and techniques, militarized and special-purpose electronics, countermine technologies, and C4 system technologies. Following are some of the Army STOs that will enable C4ISR capabilities.

Networked Sensors for the Objective Force ATD

The objective of the Networked Sensors for the Objective Force ATD is to develop and optimize sensor suites for small unmanned platforms, such as unmanned ground vehicles, small unmanned aerial vehicles and unattended ground sensors. These packages will incorporate robust (secure, jam-resistant, stealthy, self-organizing, self-healing) communications products.

A sensor hub links the networked sensors information to higher echelon communications and provides "reach back", command and control, sensor planning, and data management tools. The communications products will network the systems throughout complex terrain (including military operations in urban terrain) and demonstrate a system-of-systems capability.

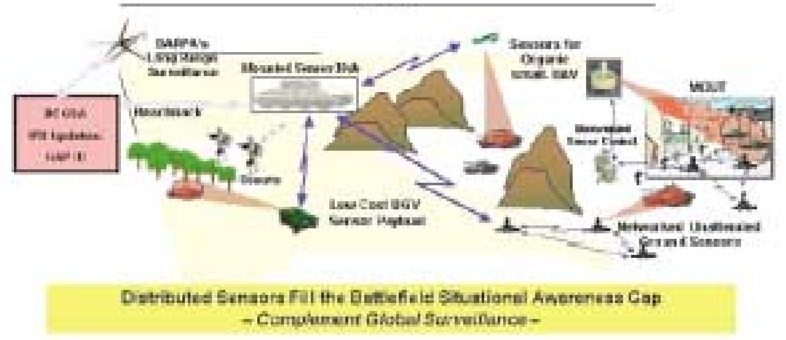
This capability will provide commanders with organic unmanned networked sensors assets to complete their beyond line of sight (BLOS) situational awareness (SA) picture and targeting information for direct and indirect fire weapons and threat avoidance. The networked sensors will:

- Provide remote monitoring of areas of interest out to ~10km without placing soldiers in harm's way.
- Increase a unit's area of coverage.
- Provide near-real-time BLOS SA data for early warning to speed decision making and reaction time.

Low-cost sensor technology, such as uncooled infrared imaging; flash laser with short-wave infrared focal planes; and acoustic, seismic, and magnetic sensors will be integrated on small unmanned platforms to demonstrate the day/night capability of these platforms to provide faster target identification and reaction time with reduced false alarms. The use of intelligence "reach back" and tools to aid in sensor deployment along with smart data management will also be developed.

Mounted and dismounted virtual simulations and live experiments with Training and

Networked Sensors for the Objective Force
ATD(p)



Doctrine Command Battlelabs in warfighter operational environments will be used to address hardware and operational integration issues; investigate new operational concepts, tactics, techniques, and procedures; and validate component and system technology readiness levels.

Sensor Performance Technologies

Current and future weapons and intelligence-collection systems rely heavily on sensors. Each sensor technology has its strengths and weaknesses in various terrain and weather conditions. Terrain and weather effects (including changing temperatures, precipitation, snow cover, ice and frozen ground) dramatically affect weapon systems that use infrared and/or passive/active millimeter wave sensors.

The 3-D Dynamic Multi-Spectral Synthetic Scene Visualization STO has developed a capability for users in a tactical setting to create virtual terrain and weather-dependent infrared and millimeter wave scenes, and animations and of terrestrial backgrounds and vehicle targets. This STO has developed a suite of sensing performance overlays for the mission planner and commander.

The mission planning and rehearsal tool will provide commanders and staff with unparalleled situational awareness to conduct detailed intelligence preparation of the battlefield, greatly enhance development of courses of action and increase target acquisition by determining sensor performance in various weather conditions, times of day, and attack angles and directions.

Battlespace Terrain Reasoning and Awareness (BTRA)

Battlespace Terrain Reasoning and Awareness (BTRA) STO seeks to develop a comprehensive suite of physical combat environment decision support tools that generate the geospatial information necessary to support the decision and execution process across C4ISR systems of the Objective Force.

BTRA will be an improvement to the current static tactical decision aids by providing dynamic tactical execution aids. These analytical tools will model the inter-relationships of terrain, weather, force/threat behavior and the influence of dynamic state environment changes. BTRA will ensure that the products of this analysis are “smart, interactive products” and have a content and structure capable of being imported and further evaluated by application-specific decision support tools of other C4ISR systems.

Full Spectrum Active Protection System (FSAP)

The purpose of this STO is to develop an active protection system able to intercept an incoming threat munition, degrade or destroy it before impact or cause it to miss its intended target. The objective of the FSAP program is to demonstrate a single, universal countermeasure for protection against smart top-attack, hit-to-kill (e.g., anti-tank guided missiles) and especially large-caliber-gun, tube-launched KE and high explosive anti-tank (HEAT) threats.

This is a joint program between the Tank Automotive Research, Development and Engineering Center, the Armaments Research, Development and Engineering Center, and the Army Research Laboratory. The FSAP uses a systems approach including development of armor systems to capture the residual debris of a successful action protection system (APS) engagement. FSAP is a key enabling technology to provide protection for the lighter weight FCS that cannot afford the weight burden of armor alone to meet its ballistic protection requirements.

Agile Commander ATD

The purpose of the Agile Commander ATD is to prototype, integrate, experiment and transition advanced command and control (C2) technology applications. The goals of the program include the following:

- Simplify and reduce the time required to plan operations.

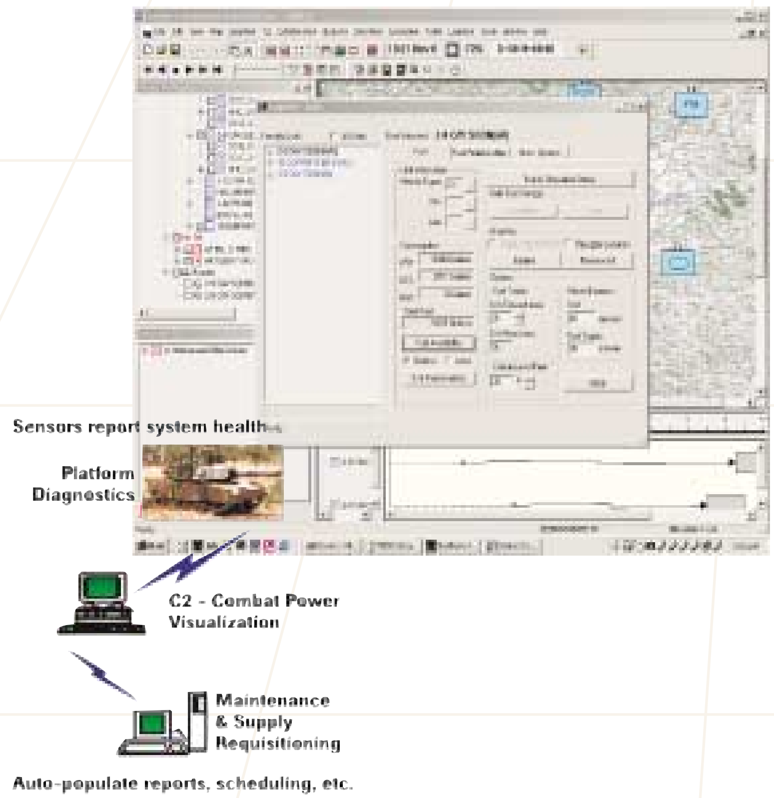
- Ensure that relevant information is available to warfighters in a timely and common-sense manner.
- Create or mature C2 systems to aid commanders and their staff to conduct operations while dispersed and on-the-move (OTM).

The prototype C2 system will showcase a full-spectrum, combined-arms capability rooted in the use of collaborative decision aids supportive of operations OTM. This C3OTM demonstration supports the Milestone B decision for FCS Block I.

The Agile Commander ATD supports the PM, Army Tactical Command and Control Systems; and the PM, Effects and Fires Command and Control Systems and FCS.

Logistics Command and Control (LOG C2) ATD

The Log C2 ATD will revolutionize the tactical decision-making process for Army logisticians by developing, demonstrating, and transitioning software products that enhance combat service support (CSS) decision-making capabilities and enable sustainment of a highly agile and versatile force. The Log C2 ATD will attain real-time planning and situation data by interfacing with legacy and interim CSS systems to provide a COP tailored to unit task, purpose and situation.



In addition, the Log C2 ATD will provide collaborative, distributed combined arms planning and decision support tools for commanders and sustainers. The Log C2 ATD will provide logistics situation understanding to commanders that enhances the planning of future operations and the execution of current operations.

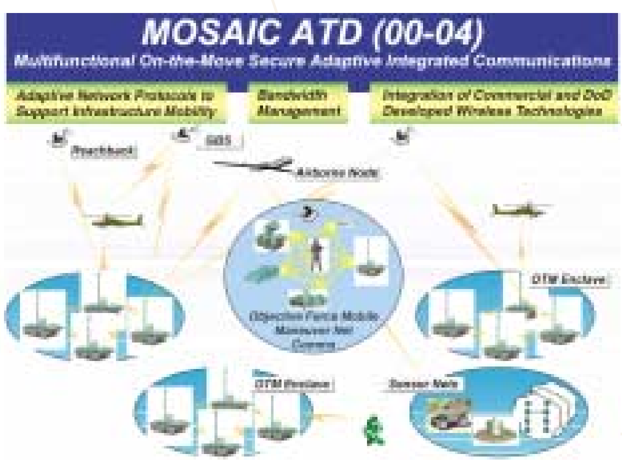
These enhancements will cut planning times and enable CSS information to be an enabler for Objective Force Maneuver Units operating with a reduced logistics tail. The Log C2 ATD supports the Combat Service Support Control System (CSSCS) and FCS.

Multi-Functional On-The-Move Secure Adaptive Integrated Communications (MOSAIC) ATD

The MOSAIC ATD will enable on-the-move (OTM) maneuver net communications for the mobile, geographically dispersed battleforce for the Objective Force/FCS. MOSAIC develops and demonstrates technologies to provide OTM capabilities required by Joint Tactical Radio System (JTRS) Cluster 1 and Warfighter Information Network - Terrestrial (WIN-T) programs for C3OTM and networking solutions. In turn, MOSAIC provides integrated network solutions for FCS Block I.

This ATD will focus on integrating a highly adaptive communications infrastructure to support the seamless flow of multimedia services across terrestrial and space-based platforms. MOSAIC will leverage leading-edge technologies developed by government and commercial research programs. Its wireless communications architecture will support multimedia applications; quality of service for mobile/multi-hop networks; adaptive and ad-hoc mobility protocols; bandwidth management; and horizontal/vertical handoff in a mobile wireless environment. The MOSAIC ATD will demonstrate connectivity between 15-20 nodes in a field environment.

MOSAIC supports FCS C3OTM, by providing:



- Mobile communications that enable commanders to effectively lead during dynamically changing and offensive operations anywhere on the battlefield, whether stationary or on-the-move, to maintain situational understanding at all times.
- Dynamic, extended range, redundant communications through a network that is:
  - — Open, featuring a multi-layered architecture with multiple paths that provides a level of redundancy for assured communications that can be quickly diagnosed and is self-healing.
  - — Improved, reliable, redundant NLOS communications to optimize connectivity through automatic link establishment to support operations in varied environments.
  - — Self-organizing and extendable – adds entities to the network in a seamless manner.

Tactical Command and Control (C2) Protect ATD

The objective of the Tactical C2 Protect ATD is to develop, integrate and validate hardware/software tools, tactics, and procedures that will secure the systems and networks of the first digitized division and Objective Force/FCS from modern network attacks. This ATD will focus on protecting the Army's modern, commercial-based tactical information networks, components and data.

The Tactical C2 Protect ATD supports Objective Force and FCS C3OTM by providing:

- Embedded information assurance/protection to deny network access to unauthorized personnel or systems.
- Detection and prevention of intruders and malicious software. This comprises identification of points of intrusion and origin, information compromised and information introduced into the network.
- Effective management of information assurance appliances and automatic reporting of such events.
- Responses to minimize the impact of such events on the performance of the network without inhibiting the network.

The Tactical C2 Protect ATD will leverage current commercial off-the-shelf (COTS) technology to the maximum extent, as well as DOD programs that target network security technology. Tools will be developed in cases where COTS technology does not satisfy tactical constraints. The approach will involve developing tactical network protection capabilities, then using attack/assessment techniques against the protection mechanism to determine the effectiveness of both. The seamless security architecture developed will be an integrated solution, providing advanced network access control, intrusion detection and response mechanisms within tactical communications networks.

- Malicious Software
- Data Insertion/ Modification/Deletion
- Illegal Advanced Privileges
- Denial of Service

- Secure Configuration
- User Identification & Authentication
- Message Authentication
- Host S/W Protection

- Host & Network Intrusion Detection
- Malicious Code Detection
- Neutral Network Predictive Technique

- Tighten Access Control
- Identify Attack Source & Skill level
- Eliminate Attack Process
- Damage Assessment/ Recovery
- Malicious Code Eradication

Joint Intelligence, Surveillance and Reconnaissance (JISR) ACTD

The Joint Intelligence, Surveillance and Reconnaissance (JISR) Advanced Concept Technology Demonstration (ACTD) is providing timely top-down/bottom-up ISR and operational information and enhanced battlespace visualization for CENTCOM's early entry force commander. This includes the need to share that picture with Joint Task Force (JTF) and coalition partners.

The program's goal is to implement an Internet, Web technology-based system of systems that integrates existing C4ISR sensors and processors to establish a joint tactical sensor grid. This sensor grid will seamlessly integrate with the existing theater command and control, intelligence (C2I) architecture to provide timely and relevant sensor data and other intelligence information to early entry forces and their supporting headquarters.

The JISR sensor grid will be composed of four major components:

- "**Information Agent**" technology to enable smart data and product retrieval across disparate legacy sensors and databases.
- Joint Technical Architecture (JTA) standard **Sensor Link Protocol (SLP)** to plug additional tactical sensors into the grid.
- Distributed **Geospatial Meta Data Base Management System** to organize, archive, and serve sensor data and other intelligence information to user-friendly Web-based visualization tools.
- **Thin Client Web Browser** technology to allow user remote access from any existing joint or combined C2I workstation.

Each of these building blocks is based on mature technology that exists today as COTS or government off-the-shelf (GOTS) products.

Force Health Protection and Combat Health Support

Medical research and technology is designed to protect and treat warfighters to ensure worldwide deployability, increase warfighter availability, and reduce casualties and loss of life.

The U.S. Army Medical Research and Materiel Command (USAMRMC) is responsible for developing technologies in this sub-section. It is responsible for enhancing battlefield medical care by adapting new technologies that will significantly reduce deaths on the battlefield. The major goals of the Army medical science and technology (S&T) program are to:

- Prevent illness and injury
- Sustain optimum military effectiveness
- Treat casualties.

The greatest payoff from the investment in biomedical S&T comes from identifying medical countermeasures (materiel and information) that eliminate and treat health hazards. These hazards include endemic infectious diseases, chemical and biological warfare agents, environmental injuries, operational stress and trauma resulting from enemy weapons.

Combat Casualty Care

Field Medical Monitoring and Therapeutic Devices for Casualty Care.

The Army is developing smaller, lighter, diagnostic, life support and surgical systems that are compatible with far-forward field operations, in which factors such as high noise, vibration and electromagnetic interference can render many medical devices unusable. These systems will fill a current gap in far-forward treatment capability and enable effective casualty care to be provided in the logistically constrained, highly mobile battlefield of the Objective Force.

Systems being developed include the Mini-STAT, a 20 lb life support system that integrates commercial device technologies with improvements in power and oxygen delivery. Other efforts will exploit penetrating radar to develop a lightweight patient monitor for medic use, and will use ceramic oxygen-generator technology to provide medical-grade oxygen without relying on logistically burdensome compressed gas cylinders.

Still other efforts focus on enhancing the current military field anesthesia delivery system to provide more reproducible drug delivery and greater patient safety. This will enable U.S. Food and Drug Administration (FDA) approval of the system; due to lack of such approval, the system cannot presently be used for peacetime operations or training. Together, these systems will enhance the capability of medics and far-forward surgeons to initiate and sustain essential critical care at the front lines and during evacuation.

Hemorrhage Control

Army medical researchers are working on a variety of products that can save lives by quickly stopping blood loss from severe wounds on the battlefield. Excessive bleeding is the most common cause of death for wounded soldiers. Even in the hospital, the major causes of early death among those who die of wounds are central nervous system injury and uncontrolled bleeding. The Army is pursuing drugs, devices, and techniques that slow or control bleeding and are usable far forward on the battlefield, since these have the greatest potential to save lives.

Army researchers have worked in coordination with Israeli investigators to explore the use of recombinant-activated human clotting factor VII (rFVIIa) in stopping internal bleeding. The protein rFVIIa binds to injured tissue and stimulates blood clot formation in the vicinity of the injury. The protein has been used successfully to treat bleeding episodes in hemophiliacs. Refer to Army Science and Technology Master Plan (ASTMP), STO IV.ME.200.03 for additional information.

Army medical researchers and clinicians working in conjunction with the American Red Cross have developed a dry fibrin sealant bandage. The new bandage is made from the last two proteins involved in the chain reaction that causes blood to clot. These two proteins are freeze-dried on a backing. The bandage is applied with direct pressure, crushing the proteins into the wound where they quickly dissolve and promote coagulation.

The pressure slows bleeding and maintains high local concentrations of the active ingredients. The clot sets within two to three minutes. Animal research demonstrates that the bandage can reduce blood loss by 50 percent to 85 percent and prevent shock normally associated with blood loss from battlefield wounds. The bandage is now in advanced development and is expected to undergo human testing in 2003–2004.

Army medical researchers are also developing expandable foams derived from fibrinogen, a protein involved in human blood clotting that is converted into fibrin, the major constituent of clots. These foams could be injected as a liquid into an inaccessible deep cavity wound of a casualty (e.g., chest, abdomen), where they would be activated, and expand to contact injured internal organs and limit bleeding.

Extended Blood Shelf Life

Army scientists and contractors at the University of Cincinnati have developed and demonstrated a 10-week liquid storage system for red blood cells. The system extends the current shelf life of liquid red blood cells by 4 weeks and is fully compatible with current military and civilian blood bank and transfusion medicine practice. The Army and the university have received a patent allowance for this system that suspends the blood cells in a specially buffered solution. The extended shelf life will enable the military to maintain supplies of blood in forward locations longer, reducing the logistics burden of replacing outdated blood.

Dental Field Treatment and Operating System (DEFTOS)

The Dental Field Treatment and Operating System (DEFTOS) is designed to be a small (less than four cubic feet), lightweight (less than 50 lbs) replacement for the current Dental Operating and Treatment Unit. It will increase the mobility and reduce the footprint of the Field Dental Treatment Team (FDTT) by eliminating the need for the 5-kilowatt generator and trailer employed in the current system.

DEFTOS is designed to operate through the use of a small 2-kilowatt generator, rechargeable batteries, or a 24–28 volt DC military vehicle power system. This system is expected to result in a total reduction of approximately 2700 lbs and 315 cubic feet per FDTT.

Weight reduction is accomplished through miniaturization of the operating components, including an electric hand piece (drill) intended to replace the current power-intensive, air turbine system. Besides the drill, other standard dental equipment includes a three-way syringe for delivery of air, water, or mist and a high- and low-volume (saliva) evacuator. The integrated system is now FDA-approved and is currently undergoing field-testing at multiple locations, including Europe.

Military Operational Medicine Research Program

Thrust areas supported within this sub-area include the following:

1. Neuropsychological Stress and Performance
2. Environmental Medicine and Bioenergetics
3. Systems Hazards.

A primary objective of the Military Operational Medicine Research Program is the transition of physiological data, models and algorithms to materiel developers and policymakers to enhance medical readiness and sustainability during deployments.

These include the following:

- Technical insertions to Land Warrior and follow-on systems for real-time command consultation.
- Furnishing real-time intelligence on warfighter readiness, sustainability, and recovered capability.
- Biomedical and performance damage risk criteria and models ensuring that soldiers' health and performance are not degraded by their own equipment.
- Identification of nutritional, pharmacological and training strategies to sustain performance in the face of operational stressors.

Neuropsychological Stress and Performance Research: Optimization of Visual Performance with Optical and Electro-Optical Systems and Materials

This research will provide the Army with essential bioengineering data and evaluations of the impact of displays on visual performance. Results can be used to guide the optimal design of advanced imaging and display technologies to solve battlefield problems such as degraded fighting environments and directed-energy, chemical and biological weapons.

Pharmacological Strategies to Enhance Mental Performance in Fatigued Soldiers

Army medical researchers are conducting investigations that will provide pharmaceutical approaches to sustain performance when adequate sleep is not possible and to optimize the recuperative value of sleep or adjustment to new time zones when the opportunity for sleep is presented or is impaired by environmental conditions. Candidate interventions with potential high payoff include certain stimulant drugs for performance sustainment, drugs for sleep induction, and melatonin to promote rapid adjustment of circadian rhythms to new time zones or work schedules. Refer to Army Science and Technology Master Plan (ASTMP), STO IV.ME.200.03 for additional information.

Environmental Medicine and Bioenergetics Research: Warfighter Physiological Status Monitoring

This research effort is designed to enhance soldier survivability and performance/mission planning through real-time physiological and cognitive assessment sensors. A series of algorithms will be developed as an integral part of a research toolkit needed to gather data on warfighter status. Details are available in the ASTMP, STO IV.ME.1997.01.

Field studies will be conducted on hydration state, thermal strain, and vigilance in warfighters to identify relevant data to commanders. This research will produce a predictive model and specifications for a minimal suite of soldier-acceptable physiological sensors that provide individual and unit health and performance indices for medics and commanders. Results will transition into Land Warrior and Objective Force Warrior initiatives.

Innovative Strategies to Assess Health Risks from Environmental Exposures to Toxic Chemicals

This research effort addresses potential health hazards to soldiers exposed to toxic industrial/agricultural chemicals (TICs) and militarily-relevant chemicals (MRCs). It will develop low-cost, sensitive screening tools to assess health risks from environmental exposures to TICs, MRCs, and chemical mixtures. Methods will be developed to evaluate the safety of water and food to protect deployed forces from incidental or purposeful contamination of these vital commodities.

Fusion of Warfighter Performance, Environmental and Physiological Models

This research will provide commanders with rapid access to basic information on the physiological readiness of their warfighters. This effort assembles the relevant knowledge of physiological and cognitive processes under extreme conditions and provides algorithms and models to interpret the status of the force for the commander. The models and decision aids will be compatible with Land Warrior and follow-on Army programs.

Rapid Analysis of Food and Water for Chemical and Microbial Contaminants

This medical research effort is designed to develop methods for rapid detection of chemical and microbial contaminants in food and drinking water to validate safety for human consumption. Enabling genomic, computer miniaturization, biotechnology and micro-electrical mechanical system technologies will be exploited. Technologies will transition to the United States Army Medical Materiel Development Activity for development of a field test kit capable of rapidly detecting pesticide and bacterial contamination.

Performance Enhancement and Injury Prevention in Hot Environments

Army medical researchers are conducting investigations that will provide methods to sustain and enhance soldier performance in hot environments. It will establish the scientific methods to manage and minimize the adverse health and performance effects of heat stress, especially as encountered in desert and jungle environments.

Systems Hazard Research

Optimization of Physical Performance

Army medical researchers will focus research efforts on non-combat injuries, the leading risk to deployment health and readiness. Databases will be formulated and guidance developed that will lead to improved design of individual equipment and efficient and safe methods for physical task performance, which will reduce physical training costs associated with musculoskeletal injuries.

Additionally, this research will construct training strategies to extend soldier performance and improve physical task capabilities. Biomedical training guidance will transition to the Center for Health Promotion and Preventive Medicine, while specifications for optimal performance with external loads will transition to the Natick Soldier Center.

Inhalation Injury and Toxicology Models

This research effort will develop predictive models of injury, incapacitation and degraded performance relevant to military scenarios involving inhaled toxic substances. These models will define the interactive physiology and biochemistry of reactive oxygen, nitrogen and other chemical species that play a critical role in tissue injury from toxic inhalation. This research will produce toxic gas analysis software that can describe a wide range of militarily-relevant conditions.

Head-Supported Mass (HSM) - Warfighter Health and Performance

This Army medical research effort will provide operational guidelines, design criteria and health-risk criteria for mass properties of head-supported devices, supporting design of FCS components and other systems that rely on such devices. Head-supported devices with misplaced centers of mass or large weight can degrade warfighter performance and increase the risk for chronic and acute injuries. The biomedical-based guidelines and criteria from this research will enhance the effectiveness of head-supported devices while reducing the risk of injuries associated with their use. This research, described in the ASTMP STO IV.ME.2001.02, contributes to the development of an integrated total body injury and performance model.

Body Armor Blunt Trauma Assessment

This research effort will establish injury thresholds to measure the forces behind impacted body armor as estimated by pathologic analysis. Scalable impactors will be developed that simulate soft and hard body armor force signatures in order to define injury thresholds. This research will use finite element models of the pig and human thorax to establish a tool for body armor developers to use in developing lighter, more comfortable body armor that will prevent blunt trauma injury for the future warfighter.

Medical Countermeasures for Laser Eye Injury

This Army medical research effort will enhance soldier survivability through reduced physiological and psychological effects of laser-induced eye injuries. Exposure limits for military lasers or exposure conditions will be updated. Guidance for field triage, a therapy kit and updated eye protection guidelines will be established, including many potential pharmacological solutions. Finally, the research will provide enhanced classifications for laser-induced injuries to the retina, and corresponding treatment/medical management strategies/informatics.

Gulf War Illness

The USAMRMC is currently managing approximately 120 projects worth more than $100 million, in addition to in-house efforts, on Gulf War illness research. The emphasis of research solicitations and peer-reviewed projects funded since 1994 includes the following:

- Epidemiological studies of symptoms and health outcomes in Gulf War veterans
- Long-term or delayed clinical effects of low-level exposures to chemical warfare agents
- Health effects associated with possible exposures to combinations of chemical warfare agents, psychological stress, environmental stressors, inoculations, insecticides and pyridostigmine bromide
- Neurobiology of stress, including prevention and treatment of chronic, nonspecific symptoms
- Safety of medical material in operational environments
- Leishmania diagnostics tests and treatments
- Heavy metal toxicity, including depleted uranium and tungsten alloys such as those currently used or contemplated for use in armor-penetrating munitions.

Advanced Medical Technology/Telemedicine Research Program

Personal Information Carrier

USAMRMC contracts with InformaTech, Inc., to produce a limited number of personal information carriers (PICs). The PIC is a small, portable data storage device with 8-128 megabyte capacity. It will be used for recording, storing and transmitting part or all of an individual's computer-based patient record, and can be worn in much the same manner as a dog tag. The PIC can be accessed with any computer containing a PCMCIA drive. It will be able to transfer data between the first and second echelons of care back to the third, fourth and fifth echelons of care.

Currently, the PIC stores pre-deployment demographic data, records of all treatment provided during a field deployment, and immunization and any post-deployment surveys and reports. The PIC underwent a proof of concept test in December 1999 at Ft. Hood, TX, and it was tested in the September 2000 Joint Contingency Strike Force Advanced Warfighting Experiment (AWE) using the Field Deployable Record (FDR). The Tri-Service Medical Information Program (TMIP) links the official testing of the PIC with the software under development. The timeframe for testing has not been determined at this time.

Special Operations Forces (SOF) Medical Handbook and Special Forces Medical Diagnostic System

Currently, the Special Operations Forces Medical Handbook (SOFMH) and Special Forces Medical Diagnostic System (SFMDS) are being integrated into future platforms to triage soldiers and treat wounds.

Several Examples of PIC Technology

The SOFMH is a medical reference library based on the operational requirements of SOF. The Special Forces Medic is primarily responsible for the treatment of trauma and mass casualties but can also provide basic surgery, anesthesia, dental, veterinary, laboratory, pharmacology, radiology, psychiatry, obstetrics, gynecology, pediatrics, tropical and preventive general medicine and primitive medicine in locales that do not have sophisticated medical support.

This project integrates the major functions of a medical reference library, diagnostic and treatment decision aids, medical sustainment training, and medical mission planning into a single portable computer-based device with Internet access capabilities.

The SFMDS records the essential elements of medical decision support rules to provide immediate decision feedback as well as modules that contain interactive simulations to support readiness sustainment. The SFMDS supports the needs of users with multiple levels of expertise through an intuitive interface that includes help windows and decision rationale for less experienced operators.

Infectious Disease Research

The Military Infectious Diseases Research Program is an Army-funded and directed program that involves Army and Navy scientists deployed in a worldwide Army-Navy network of laboratories and field sites in the United States and overseas. The program focuses on developing drugs, vaccines and vector-control products to prevent the operational impact of endemic infectious diseases in the battle area, the most common cause of military casualties during combat deployments.

Recent emphasis is on developing diagnostic devices to assist the field medic in evaluation, management and other decision-making relative to infected warfighters. Important products that have been discovered and/or developed and then fielded for use by the warfighter include:

- Vaccine to prevent bacterial meningitis in recruit trainees
- Vaccine to prevent severe upper respiratory infection caused by adenoviruses in recruit trainees
- Vaccine to prevent Japanese encephalitis in East and Southeast Asia
- Vaccine to prevent hepatitis A
- Multiple drugs to prevent malaria, including doxycycline, mefloquine, halofantrine and malarone.

Current efforts include research and development of:

- A new drug to prevent malaria
- Diagnostic devices that can be deployed in forward battle areas for use by field medical personnel for diagnosis and management of infected military personnel
- A vaccine to prevent the major causes of malaria: In groundbreaking studies conducted in the Gambia in Africa in 1999, a vaccine co-developed by the Army and SmithKline Beecham, Inc., demonstrated limited protection against naturally transmitted malaria for the first time. The effort is described in the ASTMP, STO IV.ME.1996.01.
- Vaccines to prevent the major causes of bacterial diarrhea
- A vaccine to prevent dengue, the most common viral infection in forces deployed to tropical areas
- A new standard insect repellent
- A dengue vector surveillance and control system
- Vaccines to prevent Korean hemorrhagic fever, scrub typhus, HIV, hepatitis E, and Group B Meningococcal infection
- Monoclonal antibodies to protect against unusual but highly lethal viral infections, such as Lassa fever and Ebola virus.

Medical Chemical and Biological Defense Research

Science and Technology efforts for medical chemical and biological defense focus on:

1. Identifying and evaluating medical concepts and technologies to protect the warfighter from injury or death if the warfighter is exposed to chemical or biological warfare agents.
2. Bringing the best of these forward for transition to advanced development.

Medical chemical defense research efforts include:

- Identification of pathophysiological mechanisms involved in toxic processes.
- Development and evaluation of products to prevent or counter the effects of chemical warfare agents.
- Development of assays and equipment for diagnosing chemical warfare agent exposure.
- Development of methods to measure effectiveness in animal models that are predictive of the human response.

S&T efforts for medical biological defense focus on:

- Identification of mechanisms involved in the disease processes and development of an understanding of the generation and control of the immune response.
- Development and evaluation of prophylactics (vaccine and pretreatment candidates), and therapeutic concepts and technologies. Multi-agent vaccines are discussed in the ASTMP, STO III.ME.1998.01.
- Development of methods to measure the effectiveness of products in animal models that are predictive of the human response.
- Development and evaluation of diagnostic technologies and systems.

Next-Generation Anthrax Vaccine

The events of September 11, 2001 and the bioterrorism incidents involving anthrax that followed it have greatly increased emphasis on accelerating the development of a next-generation anthrax vaccine. The objective of current efforts is to characterize (biochemically and immunologically) and deliver a vaccine based on recombinant protective antigen (rPA), a protein from the anthrax organism.

These efforts include the development of a blood test that will indicate the ability of the vaccine to protect against inhalation anthrax (bacillus anthracis), compared to the protective antibody response in animals. Preliminary efficacy experiments in a rabbit model have already demonstrated protection from the rPA vaccine produced from either B. anthracis or E. coli expression systems.

Challenges include expanding animal efficacy data comparing Anthrax Vaccine Absorbed (AVA, the currently licensed vaccine) with rPA, and to demonstrate surrogate efficacy against B. anthracis aerosol challenge with antibody to rPA alone. The immediate goal is to obtain transition of the program to Component Advanced Development in the first quarter of FY02, thus activating advanced development activities required for investigational new drug filing and phase 1 clinical trials, which are key steps in obtaining FDA licensure.

Congressionally Directed Medical Research Programs

The USAMRMC Office of Congressionally Directed Medical Research Programs (CDMRP) manages targeted biomedical research programs mandated by Congress. The mission of the CDMRP is to advance health care solutions in areas identified by Congress and the Department of Defense (DOD) by funding excellent research, recognizing and mobilizing untapped opportunities, creating partnerships and guarding the public trust in these target areas.

Since its inception in FY92, the CDMRP has managed approximately $2 billion to support peer-reviewed research, spanning 26 programs. The five core programs managed by the CDMRP focus on breast cancer, prostate cancer, ovarian cancer, neurofibromatosis and military health. More than 3,500 contracts and grants have been awarded and are managed by the CDMRP. The USAMRMC will continue to manage peer-reviewed research programs in breast, prostate, and ovarian cancers; neurofibromatosis; military health; and other areas as specified by Congress.

Rotorcraft

Rotorcraft research and technology is designed to enhance the performance and effectiveness of future rotorcraft, including rotors and structures, propulsion and drive systems, avionics and weapons, and human-systems integration (e.g., crew station) technologies. Following are some of the Army Science and Technology Objectives (STOs) that will enable Rotorcraft capabilities.

Hunter Standoff Killer Team (HSKT)

The Hunter Standoff Killer Team (HSKT) ACTD is an FY01-06 ACTD that will demonstrate advanced precision targeting, manned and unmanned vehicle teaming and battlefield cognitive decision-aiding. These advanced warfighting capabilities will be integrated from mature technologies. The elements will be linked with other service assets as part of a joint maneuver task force to show the utility of teamed airborne reconnaissance, surveillance, targeting and attack operations in a joint environment. The Army STO supporting the HSKT ACTD is the Airborne Manned/Unmanned System Technology Demonstration.

The HSKT ACTD will also demonstrate the techniques, tactics and procedures (TTPs) and concept of operations (CONOPS) while conducting a Joint Military Utility Assessment (JMUA). The Commander in Chief (CINC) sponsor for this ACTD is Pacific Command (PACOM)/United States Forces Korea (USFK).

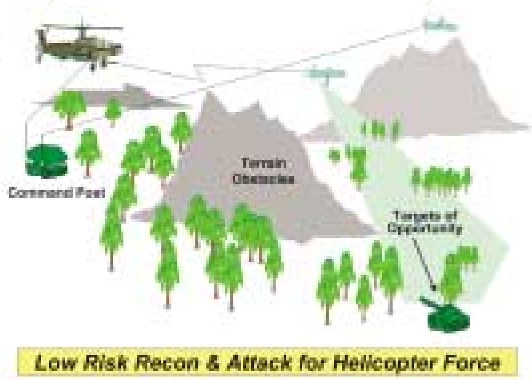
HSKT will enable warfighters to improve their ability to mass fires and effects while increasing force effectiveness in lethality, survivability and tempo. HSKT will also improve intelligence and battle command situational awareness. HSKT will integrate and demonstrate the following technologies and warfighting tools:

- Cognitive Decision Aiding (CDA)
- Teaming UAVs with AH-64D Longbow Apaches and the Army Airborne Command and Control UH-60 Black Hawk. Manned-unmanned teaming will allow the AH-64D Longbow Apache to use UAVs as wingmen, extend shooter eyes-on-target, increase situation awareness within current cockpit workload and produce a more lethal, more survivable, more responsive manned platform
- Precision targeting sensor on UAVs
- Upgraded accuracy of Joint Standoff Weapons (JSOW) engagements from Navy F/A-18
- Exploitation of overhead theater surveillance assets.

Loiter Attack Munition—Aviation

The Loiter Attack Munition—Aviation STO seeks to provide the Objective Force with a beyond-line-of-sight networked missile with a helicopter-launched capability. This effort will demonstrate, through flight simulations and component developments, technologies for long-range (> 50 km) weapon systems for airborne forces. The effort will provide the following:

- Enhanced sensor-shooter connectivity
- Continuous in-flight autonomous feedback of target coordinates to local field commanders
- Minimized timelines for placing weapons on target
- Battlefield damage assessment with last images before impact
- Demonstration of automatic and man-in-the-loop target acquisition and engagement concepts.



This effort will also provide a rail interface and boost motor design capable of achieving stable helicopter rail launch in the presence of rotor downwash.

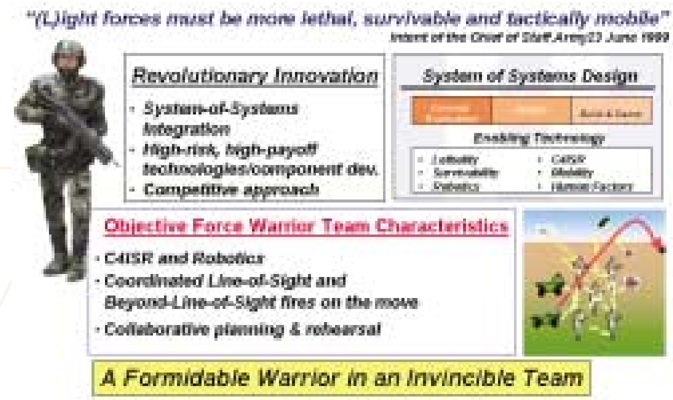
Future Warrior Technology

Future Warrior Technologies support the future infantry soldier, including enhanced ballistic protection, clothing and equipment, dismounted warrior C4, compact power and power management, sustenance and nutritional enhancements, soldier weapons and warrior technology integration. Following is one Army STO that will enable Future Warrior capabilities.

Objective Force Warrior

To achieve overwhelming overmatch, the Objective Force Warrior (OFW) must be capable of applying a new fighting paradigm: See First; Understand First; Act First; and Finish Decisively. The OFW Program will mature and demonstrate the Army's emphasis on integrated system-of-systems functionality. It will provide the dismounted soldier the equivalent combat-overmatch capability that the FCS brings to the mounted Maneuver portion of the Objective Force.

Objective Force Warrior—Revolutionary Systems Concept



OFW will employ open-system architectures and high-risk/high payoff technologies to yield an ultra-lightweight, stealthy armored suit, integrated with multi-function sensors, weapons and medical capabilities. The goal is to achieve advances in soldier survivability, lethality and agility to operate for extended periods under arduous conditions, with minimal loss in physical capabilities from fatigue, stress and hardship. This soldier system-of-systems can be connected to other dismounted personnel and micro-robotic air/ground platforms to form adaptive, distributed sensor networks for better understanding of local environments and threats.

A competitive concept exploration and design phase will be followed by a build and demonstration phase to provide an integrated soldier system-of-systems demonstrator. Concurrent maturation of technologies and their manufacturing processes will be performed to ensure system-of-system affordability, with reduced sustainment costs.

Lethality

Lethality technologies are designed to enhance the light forces, such as the Line-of-Sight Anti-tank (LOSAT) System and the Precision Guided Mortar Munition, and to provide lethality options for the Objective Force, such as the electromagnetic gun and tactical high-energy laser. Following are some of the Army STOs that will enable lethality technologies.

Low Cost Precision Kill/Advanced Precision Kill (LCPK) ATD

The goal of the Low Cost Precision Kill/Advanced Precision Kill (LCPK) ATD is to provide a mid-range, air-to-ground weapon capable of defeating non-tank targets such as selected personnel carriers, air defense emplacements, small watercraft, military operations on urbanized terrain targets, and lightly armored vehicles.

The weapon will provide increased stowed kills and will be capable of point target accuracy while producing minimal collateral damage. The Army has identified and documented a requirement for Advanced Precision Kill Weapon Systems (APKWS) to fill the weapon gap between the current unguided 2.75-inch rocket system and the HELLFIRE anti-armor missile.

The LCPK ATD program addresses key features of the APKWS operational requirement by developing, demonstrating, and integrating a low-cost (less than $10,000), accurate (~1 m CEP), 2.75-inch guided rocket onto the AH-64D Apache. The LCPK will provide a standoff range of greater than 6 km with a surgical strike capability against specified point targets.

The LCPK will use a small, strap-down laser seeker, off-the-shelf inertial devices and low-cost control mechanization. A high, single-shot probability of kill will be achieved, reducing cost-per-kill by 5 times, minimizing collateral damage, and increasing the number of stowed kills by 4–20 times.

Program exit criteria	Threshold	Goal
Accuracy (CEP, meters)	2	1
Maximum range (km)	5	> 6
Minimum range (km)	1.5	1
Per unit production costs ($)	< 10,000	< 8,000
Weight (lbs)	< 35	< 30
Length (in)	< 75	< 70

Objective Crew Served Weapon (OCSW) ATD

The Objective Crew Served Weapons (OCSW) ATD will demonstrate the technological maturity and operational utility of a highly lethal, lightweight, two-man portable, crew-served weapon. This system will provide a full-solution, day/night, target acquisition and fire control system. The OCSW will significantly reduce the dismounted soldier's load by providing a greater than 60 percent reduction in weapon system weight, and a 75 percent reduction in ammunition on a weight-per-kill basis, compared to current crew-served weapon systems. With its high-explosive, precision, air-bursting munitions, the OCSW system will provide revolutionary overmatch lethality.

The OCSW will defeat body-armor-protected threat personnel in defilade out to a maximum effective range of two kilometers. It will defeat light and lightly armored vehicles beyond one kilometer with its armor-piercing warhead, provide a heavy machinegun capability in a medium machinegun package/role and will also be a fully interoperable, lethality component block upgrade to Land Warrior.

In accordance with the strategy of the Army and Joint Service Small Arms Master Plans, the OCSW will provide the 21st century warfighter with dramatic improvements in lethality, survivability, reduced soldier load and sustainability. In addition to the capabilities it affords to dismounted warriors, the OCSW also has significant potential for vehicle mounted operation such as filling the role of the Crusader Defensive Armament System and the secondary armament for the FCS.

Solid State Heat Capacity Laser (SSHCL) Science and Technology Objective

In FY01, the Army began investing in high energy laser (HEL) technologies to support advanced weapon technology development efforts for the Objective Force. The Army S&T budget for HEL technology is supporting the development of a high-average-power (15 kilowatt), solid-state, heat capacity laser (SSHCL) laboratory breadboard by FY04.

Successful progress of this effort will initiate the development of a 100-kilowatt laboratory brassboard, scheduled for completion by FY07. The characteristics of solid-state laser technology, such as all electric operation, more efficient optical pumping with laser diodes rather than flashlamps, lightweight and compact packaging, and good beam propagation, show promise for deployment on a small, mobile weapon platform as an element in the FCS.

The SSHCL STO is leveraging other laser programs, such as the Department of Energy National Ignition Facility, the combined U.S./Israeli Tactical High Energy Laser Advanced Concept Technology Demonstration, the U.S. Air Force Airborne Laser Program, and efforts supported by the Department of Defense High Energy Laser Joint Technology Office.

This STO is also addressing related technical issues such as lethality, laser beam degradation due to atmospheric effects, precision optical pointing and tracking, effectiveness against low-cost laser countermeasures and potential subsystem/ component issues attributable to technology integration. The Army recently demonstrated the nation's highest average power, solid-state laser (10 kW) as part of the SSHCL STO. This laser system is a laboratory device that has recently been relocated to the High Energy Laser Systems Test Facility in New Mexico for continued development and propagation and lethality testing.

Logistics Reduction

Logistics reduction technologies enhance deployability and reduce logistics demand. Examples include precision roll-on/roll-off air delivery, technologies for airfields and pavements to support force projection, 21st century truck and robotics to support -resupply and demand for food, fuel, and water. For convenience, environmental programs managed by the U.S. Army Corps of Engineers (USACE) are also included in this section.

Following are some of the Army programs and STOs that will enable logistics reduction and environmental technologies.

Corps of Engineers Research and Development (R&D)

The spectrum of likely operations for the U.S. Army spans a variety of missions, including humanitarian assistance, disaster relief, peacekeeping and peacemaking and major theater wars.

The USACE R&D program is prepared to support the nation's warfighters across this spectrum of conflict in all environmental conditions. The goal of USACE's R&D efforts is to provide America's warfighters with the best equipment, planning tools and information possible.

Engineer Research and Development Center (ERDC)

The mission of the ERDC is to provide integrated research, development and engineering services in the fields of civil engineering and environmental quality to support the programs of USACE, Army, DOD and the nation.

Within the ERDC, research and engineering studies are conducted on a variety of topics related to combat engineering, infrastructure support and maintenance, and environmental quality and stewardship. The R&D scientific and engineering investigations include basic and applied research, problem identification and final implementation of the R&D product.

JRAC Joint Rapid Airfield Construction (JRAC)

The objective of this STO is to produce engineering tools that will vastly improve the military's capability to rapidly construct contingency airfields in the theater of operations. The primary objectives of this program are the following:

- Integrate advanced terrain analysis technologies and performance prediction modeling to optimize contingency airfield site selection.
- Exploit advanced construction technologies to enhance airfield construction productivity.
- Utilize emerging commercial soil stabilization technologies to rapidly provide contingency airfield surfaces capable of sustaining mission operations.

Rapid deployment of the Objective Force will require in-theater airfields to sustain intense aircraft traffic associated with the stability and support operations (SASO) and small-scale conflict (SSC) scenarios. In many force projection operations, in-theater airfields are either nonexistent or severely deteriorated. Currently, light/medium military engineer units do not have the capability to rapidly upgrade existing or construct contingency airfields to support Objective Force mission requirements.

The objectives of this effort will bring together technologies that will assist the Interim and Objective Forces in achieving optimal force projection throughput. This effort will provide solutions for rapidly increasing the maximum-on-ground (MOG) rating of existing and contingency facilities.

This effort will create a rapid and effective site selection process, enhance construction productivity by 30 percent using computer assisted methods, and develop innovative stabilization techniques that will reduce required additive amounts by 50 percent and improve material cure times by as much as 96 percent.

Enhanced Coastal Trafficability and Sea State Mitigation (ECT/SSM) ATD

This ATD is a critical component of the DOD effort to meet CINC requirements for a robust Sea State 3 logistics-over-the-shore (LOTS) capability. The ECT/SSM ATD will demonstrate the impact of recently developed technology for joint logistics-over-the-shore (JLOTS) operations. It includes:

- A rapidly installed breakwater (RIB) that enables Sea State 3 operability at offshore anchorages used during JLOTS operations.
- A sand-fiber stabilization system, plastic hex mat and fiberglass mat for rapid beach preparation and sustained trafficability during JLOTS operations.

A primary limit to throughput in JLOTS operations is the exchange of Army pre-positioned stocks (APS) to lighters during Sea State 3 conditions. A RIB provides relatively calm areas in which these operations could be safely conducted during such conditions. The primary goals of the ATD are the following:

- Successfully deploy an ocean-scale RIB. The RIB would create a sheltered area within its lee in which Sea State 3 conditions are reduced to Sea State 2 or lower.
- Demonstrate improved techniques for rapidly stabilizing beach soils from off-load sites to inland road networks.

To accomplish this, a RIB will be deployed during a scheduled JLOTS exercise in 2002, to demonstrate the capability of the system for sea state mitigation and rapid set-up time. The impact of rapid beach stabilization technology will also be demonstrated by comparing construction times, material requirements and the durability of existing and new capabilities.

Hazardous Waste Remediation of Army Sites

Soils and groundwater contaminated by explosives, organics and heavy metals exist at many Army installations. The cost to complete the Army's restoration program at its active and Base Realignment and Closure (BRAC) installations is currently estimated at $7 billion. This reduces resources available to the warfighter. In some cases, training-range activities must be substantially altered or stopped completely due to off-site migration of lead from expended bullets. Current processes to remediate these hazardous wastes typically involve digging, hauling and treating soils and pumping and treating groundwater.

The Army conducts research, development, test and evaluation (RDT&E) to address these requirements, and emphasizes the development of passive-treatment technologies. For explosives and organics, technologies include natural attenuation, bio-augmentation, indigenous and enhanced biological transformations, reactive barriers (such as zero valent ion barriers) and integrated processes that couple chemical transformations of the contaminants with microbial mineralization of the transformation products. For heavy metals, technologies include phytoremediation, chemical treatment, electrokinetic treatment, advanced contaminated extracts treatment and an in-process analysis method for treating soils.

Unexploded Ordnance (UXO) Identification and Discrimination

The March 2001 Unexploded Ordnance Response to Congress estimates that 2,000 closed, transferring and transferred (CTT) ranges, comprising millions of acres located throughout the United States, potentially contain buried UXO. The costs associated with cleanup of these sites is estimated to range between $14 and $84 billion. Current methods used to detect buried UXO indicate that up to 99 percent of the excavated objects are non-hazardous metal objects.

Approximately 75 percent of the costs of remediating a UXO site are spent on excavating these false targets. These costs effectively reduce the resources available to the warfighter for combat operations and development. The February 1998 Defense Science Board (DSB) Task Force report titled "Landmine Detection and Demining and Unexploded Ordnance (UXO) Clearance" recommends a short-term (three to five year), 10-fold false-alarm reduction as the goal of the UXO environmental remediation R&D program.

The Army has initiated this technology development program to achieve the DSB goals while maintaining probabilities of detection at or above current levels (90-95 percent). This will be accomplished by thoroughly defining the impact of site conditions on sensing and discrimination of UXO, to provide a foundation for more robust sensing and physics-based multi-sensor fusion approaches.

By FY04, the Army plans to develop and field-demonstrate UXO sensing and analysis that will reduce nuisance alarm rates by 90 percent over a wide variety of conditions, while maintaining or improving the current probability of detection (Pd) levels (90–95 percent). This program will be coordinated directly with the Army Joint UXO Coordination Office as part of the DOD UXO Center of Excellence. This will ensure that the research supports and complements the total landmine, demining and UXO detection program.

Sustainable Military Use and Stewardship of Army Lands

Training range and land management research focuses on providing knowledge and tools to assess, monitor, model and mitigate the effects of environmental conditions and compliance requirements on the capabilities of training ranges and lands to support training and testing activities. The intent of the efforts are to reduce or eliminate restrictions on the military use of lands and ranges, thereby sustaining the live training and testing that is essential to maintaining a trained and ready force and support transformation.

The research involves improving the knowledge base of cause-effect relationships and mitigation techniques related to the interaction of training and testing actions and environmental processes. Research results will provide an ability to match mission activities with the capabilities of specific training land and range resources and, through a risk assessment approach, determine environmental compliance requirements to maintain operations.

The work will take advantage of existing and emerging modeling and mitigation technologies in erosion control, community ecological dynamics, fate and transport of contaminants and noise propagation and management. The effort will incorporate information on training and testing land use distribution and define the interaction between this use and environmental processes in different environments.

This will improve and provide for simulation and prediction capabilities for decision support and identify technologies to manage resources to achieve sustainable use. The increased knowledge base and advanced decision-support capability will enable proactive and cost-effective management of lands, and up to 50 percent reduction of current land use constraints. These efforts will enhance the condition of land to support Army readiness.

Survivability

Survivability technologies enable organizations, platforms, and soldiers to avoid detection, acquisition, hit, penetration, and kill. Following are some of the Army STOs that will enable survivability technologies.

Integrated Situation Awareness and Targeting (ISAT) ATD

The Integrated Situation Awareness and Targeting (ISAT) program develops integrated system concepts to enhance the warfighting effectiveness and efficiency of the weapon system/team. ISAT will demonstrate an airborne multi-spectral warning suite with precision location capabilities.

ISAT will also demonstrate tactical electronic warfare's role in information and intelligence warfare and the ways it can assist the crew and commander on the modern battlefield. By increasing the number of information-gathering sensors in the tactical-level battlespace—through the networking of platforms equipped with passive detection systems and accurate space/time reference systems—the warfighter will be provided with an unambiguous picture of the electronic battlefield. This picture will be produced by the cooperative integration of the radar, missile and laser warning spectrums, enabling reduced decision timelines for defensive/offensive actions, rerouting/threat avoidance, target acquisition/identification and anti-fratricide.

ISAT will give our warfighters at the crew level and at higher echelons an operationally significant advantage: an increased awareness of the environment around the aircraft, which will enable better, more rapid decision-making while on the move. This awareness will reduce risks to warfighters, whether dispersed or in close proximity. The multi-spectral warning suite will enhance the detection of targets across the battlespace, improve engagement ranges and provide other options for enemy suppression. The precision-emitter location capability will increase the effectiveness and efficiency of the warfighter. These advances will also aid the warfighter in the areas of combat identification and system/team survivability.

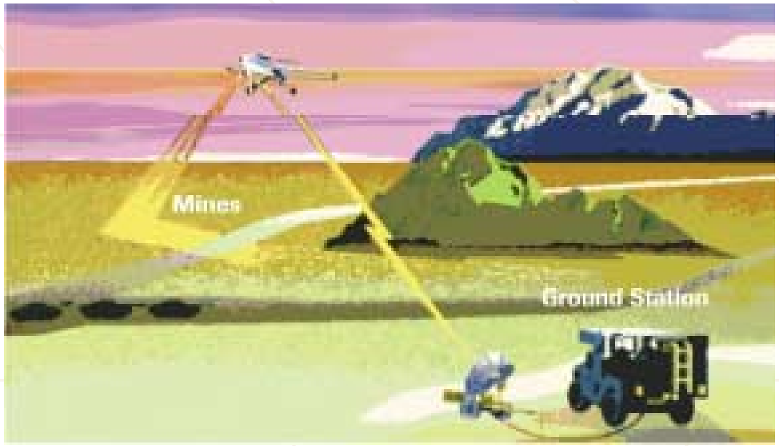
Integrated Situation Awareness and Targeting
Advanced Technology Demonstration

...Sets Conditions for Full-Spectrum Dominance

Lightweight Airborne Multispectral Minefield Detection (LAMD)

The Lightweight Airborne Multispectral Minefield Detection (LAMD) system STO explores an innovative concept and technology to support a lightweight airborne standoff minefield and nuisance mine detection system capable of detecting surface laid patterned minefields. Potentially, recently buried mines may be capable of being detected.

This STO will investigate a variety of new components and focal plane array (FPA) technologies such as 3-5 micron size staring FPAs, multispectral/hyperspectral FPAs, passive polarization, active sources, sensor fusion and electronic stabilization to support a lightweight, limited capability for future tactical unmanned aerial vehicles (UAVs). LAMD has been structured to provide an interim capability, known as LAMD-I. LAMD-I will provide a limited minefield detection capability that can be integrated onto the tactical UAV (TUAV) through the WESCAM Advanced Electro-Optical Infrared (EOIR) sensor as early as FY03.



Personnel Technologies

Personnel technologies include advanced training tools and methods to enhance Warfighter and commander abilities and performance; advanced human engineering concepts to ensure human system physical compatibility; and cognitive engineering concepts to avoid information overload and optimize task allocation to enhance warfighting effectiveness.

Following are some of the Army STOs that will enable personnel technologies.

Methods and Measures of Commander-Centric Training STO

This STO will develop and assess C4ISR training methods for Objective Force commanders and operators and formulate principles of effective training and measurement in the Army's future environment. This STO will provide changes in unit behavior associated with digitization, identify key skills for digital system operators, identify key commander and operator skills in the C4ISR function and develop measures of performance with defined levels of proficiency.

It will also describe requirements for automated measurement tools in realistic simulated environments and employ controlled research environments for assessing training methods and formulate and assess training principles for key C4ISR skills to provide to materiel, training, doctrine and training device developers.

Selection, Classification and Performance Metrics for the Objective Force STO

This STO will develop and test methods for identifying knowledge, skills and attributes (KSAs) needed for effective future performance and validating predictor measures needed for selecting and classifying soldiers in 2008 and beyond.

This STO will identify common demands for future Army initial entry jobs and identify selected future demands for two job groups and KSAs needed to effectively perform future jobs in these groups. The KSAs will include those linked to Army-wide demands and those unique to these groupings. The STO will develop predictors and measures of future performance, then link predictors and performance measures to provide recommendations for future enlisted selection and classification.

Advanced Simulation

Advanced Simulation tools provide increasingly realistic environments and systems to support acquisition, requirements, and training. This includes technologies for networked simulations, embedded training, constructive simulations, virtual environments and range systems for live use.

Following is one of the Army STOs that will enable Advanced Simulation leading to immersive virtual training.

Institute for Creative Technologies (ICT)

The Institute for Creative Technologies (ICT) at the University of Southern California (USC) is an innovative partnership with the private sector to exploit advances in the entertainment and game industries to enhance Army training and design. It is a Department of the Army-sponsored university-affiliated center for research, application and education in modeling and simulation technologies. Advances in modeling and simulation will revolutionize how the Army develops doctrine and requirements, designs equipment, trains soldiers and rehearses missions. The ICT represents an unprecedented collaboration between the Army and the entertainment industry.

In its first two years, the ICT has established itself as a dominant player in the field of human immersion in virtual reality. The Institute's researchers have contributed significantly to basic research in such fields as Natural Language Processing, Real Time Motion Capture for animating virtual humans and synthetic sound projection. The ICT has captured the resulting technologies to create immersive simulations such as the Mission Rehearsal Exercise that is recognized by the Defense Modeling and Simulation Office as the best training simulation of 2001 and was awarded the best application of autonomous agent technology during the 2001 Autonomous Agents Conference.

Mission Rehearsal

"Flatworld"

Science and Technology

Appendices

Army Combat Organizations

Glossary of Terms

Top Fifty Contractors

Contractors by System

Contractors by State

Points of Contact

Index

Army Combat Organizations

Army organizations are inherently built around people and the tasks they must perform. Major combat organizations are composed of smaller forces as shown here.

Squad

Leader is a sergeant

Smallest unit in Army organization

Size varies depending on type—Infantry (9 men), Armor (4 men), Engineer (10 men)

Three or four squads make up a platoon

Platoon

Leader is a lieutenant

Size varies—Infantry (40 men), Armor (4 tanks, 16 men)

Three or four platoons make up a company

Company

Commander is a captain

Usually 150–220 men

Artillery unit of this size is called a battery

Armored Cavalry or Air Cavalry unit is called a troop

Basic tactical element of the maneuver battalion or cavalry squadron

Normally five companies make up a battalion

Battalion

Commanded by a lieutenant colonel

Tactically and administratively self-sufficient

Armored Cavalry and Air Cavalry equivalents called squadrons

Two or more combat battalions make up a brigade

Brigade

Commanded by a colonel

May be employed on independent or semi-independent operations

Combat, combat support or service support elements may be attached to perform specific missions

Normally three combat brigades are in a division

Division

Commanded by a major general

Fully structured division has own brigade-size artillery, aviation, engineer, combat support and service elements

Two or more divisions make up a corps commanded by a lieutenant general

Acquisition Categories (ACAT): ACAT I programs are Milestone Decision Authority Programs (MDAPs) or programs designated ACAT I by the Milestone Decision Authority (MDA). ACAT I programs have two sub-categories:

1. ACAT ID, for which the MDA is USD (A&T). The "D" refers to the Defense Acquisition Board (DAB), which advises the USD (A&T) at major decision points.

2. ACAT IC, for which the MDA is the DOD Component Head or, if delegated, the DOD Component Acquisition Executive (CAE). The "C"refers to Component. The USD (A&T) designates programs as **ACAT ID** or **ACAT IC**.

ACAT IA programs are MAISs or programs designated by the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (ASD [C3I]) to be ACAT IA. A MAIS is an AIS acquisition program that is:

1. Designated by the ASD (C3I) as a MAIS, or

2. Estimated to require program costs in any single year in excess of 30 million in FY96 constant dollars, total program costs in excess of 120 million in FY96 constant dollars, or total life-cycle costs in excess of 360 million in FY96 constant dollars.

ACAT IA programs have two sub-categories:

1. ACAT IAM, for which the MDA is the Chief Information Officer (CIO) of the Department of Defense (DOD), the ASD (C3I). The "M" (in ACAT IAM) refers to Major Automated Information System Review Council (MAISRC). (Change 4, 5000.2-R)

2. ACAT IAC, for which the DOD CIO has delegated milestone decision authority to the CAE or Component CIO. The "C" (in ACAT IAC) refers to Component.

ACAT II programs are defined as those acquisition programs that do not meet the criteria for an ACAT I program, but do meet the criteria for a major system, or are programs designated ACAT II by the MDA.

ACAT III programs are defined as those acquisition programs that do not meet the criteria for an ACAT I, an ACAT IA, or an ACAT II. The MDA is designated by the CAE and shall be at the lowest appropriate level. This category includes less-than-major AISs.

ACAT IV Programs not designated as ACAT I, II, III and used to differentiate these non-major program managed by a systems manager within a materiel command rather than by a Program, Project, Product Manager (PM). These programs receive an In Progress Review (IPR) and require a decision by the materiel command commander (or appointed designee) at the milestone review. (AR 70-1, 4-1f)

Acquisition Phase: All the tasks and activities needed to bring a program to the next major milestone occur during an acquisition phase. Phases provide a logical means of progressively translating broadly-stated mission needs into well-defined system-specific requirements and ultimately into operationally effective, suitable, and survivable systems. The acquisition phases for the systems described in this handbook are defined below:

Concept and Technology Development: Concept and Technology Development refers to the development of a materiel solution to an identified, validated need. During this phase, the Mission Needs Statement (MNS) is approved, technology issues are considered, and possible alternatives are identified. In this phase, the initiation concept is approved, a lead Component is designated, and exit criteria are established. The leader of the concept development team will work with the integrated test team to develop an evaluation strategy that describes how the capabilities will be evaluated once the system is developed.

Major components of this phase are Concept Exploration, Decision Review, and Component Advanced Development. Concept Exploration evaluates the feasibility of alternative concepts and assesses the merits of these concepts. This phase ends with a Decision Review, at which the preferred concept for which technologies are available is selected. The Decision Review may also determine whether additional component development is necessary before key technologies can enter System Development and Demonstration. Component Advance Development occurs when the project leader has a concept for the needed capability, but does not yet know the system architecture. The project exits Component Advanced Development when a system architecture has been developed and the component technology has been demonstrated in the relevant environment or the Milestone Decision Authority (MDA) decides to end this effort. This effort is intended to reduce risk on components that have only been demonstrated in a laboratory environment and to determine the appropriate set of subsystems to be integrated into a full system.

System Development and Demonstration: System development and demonstration is the process of developing concepts into producible and deployable products that provide capability to the user. The purpose of this phase is to develop a system, reduce program risk, ensure operational supportability, design for producibility, ensure affordability, and demonstrate system integration, interoperability, and utility. The major components of this phase are System Integration, System Demonstration, and Interim Progress Review. Development is aided by the use of simulation-based acquisition and guided by a system acquisition strategy and test and evaluation master plan (TEMP). System modeling, simulation, and test and evaluation activities are integrated into an efficient continuum planned and executed by a test and evaluation integrated product team (T&E IPT).

The independent planning, execution, and evaluation of dedicated Initial Operation Test and Evaluation (IOT&E), as required by law, and Follow-on Operational Test and Evaluation (FOT&E), if required, are the responsibility of the appropriate operational test activity (OTA). The program enters System Integration when the Project Manager has an architecture for the system, but has not yet integrated the subsystems into a complete system. This effort is intended to integrate the subsystems and reduce system-level risk. The purpose of the Interim Progress Review is to confirm that the program is progressing as planned or to adjust the plan to better accommodate progress made to date, changed circumstances, or both. The program enters System Demonstration when the Project Manager has demonstrated the system in prototype articles.

Production and Deployment: The purpose of the Production and Deployment phase is to achieve an operational capability that satisfies mission needs. In this phase, software has to prove its maturity level prior to deploying to the operational environment. Once maturity has been proven the system or block is baselined and a methodical and synchronized deployment plan is implemented to all applicable locations. A system must be demonstrated before DOD will commit to production and deployment. For DOT&E Oversight programs, a system can not be produced at full-rate until a Beyond Low-Rate Initial Production Report has been completed and sent to Congress, the Secretary of Defense, and the USD(AT&L).

The components of this phase include Low-Rate Initial Production (LRIP), the Full-Rate Production Decision Review, and Full-Rate Production and Deployment. LRIP is intended to result in completion of manufacturing development to ensure adequate manufacturing capability and to produce the minimum quantity necessary for initial operational test and evaluation. The Full-Rate Production Decision Review considers the cost estimate, manpower, results of test and evaluation, compliance and interoperability certification. Following the completion of a Full-Rate Production Decision Review, the program enters Full-Rate Production and Deployment.

Operations and Support: The objective of the Operations and Support phase is the execution of a support program that meets operational support performance requirements and sustainment of systems in the most cost-effective manner throughout their life-cycle. The sustainment program includes all elements necessary to maintain the readiness and operational capability of deployed systems. The scope of support varies among programs but generally includes supply, maintenance, transportation, sustaining engineering, data management, configuration management, manpower, personnel, training, habitability, survivability, safety, IT supportability, and environmental management functions. This activity also includes the execution of operational support plans.

Programs with software components must be capable of responding to emerging requirements that will require software modification or periodic enhancements after a system is deployed. A follow-on operational test and evaluation program that evaluates operational effectiveness, survivability, suitability, and interoperability, and that identifies deficiencies is conducted, as appropriate.

At the end of its useful life, a system must be demilitarized and disposed of. Disposal must be carried out according to all legal and regulatory requirements relating to safety, security and the environment.

Acquisition Program: A directed, funded effort designed to provide a new, improved or continuing weapons system or AIS capability in response to a validated operational need. Acquisition programs are divided into different categories that are established to facilitate decentralized decision-making, and execution and compliance with statutory requirements.

Advanced Concept Technology Demonstrations (ACTDs): ACTDs are a means of demonstrating the use of emerging or mature technology to address critical military needs. ACTDs themselves are not acquisition programs, although they are designed to provide a residual, usable capability upon completion. If the user determines that additional units are needed beyond the residual capability and that these units can be funded, the additional buys shall constitute an acquisition program with an acquisition category generally commensurate with the dollar value and risk of the additional buy.

Automated Information System (AIS): A combination of computer hardware and software, data, or telecommunications, that performs functions such as collecting, processing, transmitting, and displaying information. Excluded are computer resources, both hardware and software, that are physically part of, dedicated to, or essential in real time to the mission performance of weapon systems.

Commercial and Non-Developmental Items: Market research and analysis shall be conducted to determine the availability and suitability of existing commercial and non-developmental items prior to the commencement of a development effort, during the development effort, and prior to the preparation of any product description. For ACAT I and IA programs, while few commercial items meet requirements at a system level, numerous commercial components, processes, and practices have application to DOD systems.

Demilitarization and Disposal: At the end of its useful life, a system must be demilitarized and disposed. During demilitarization and disposal, the PM shall ensure materiel determined to require demilitarization is controlled and shall ensure disposal is carried out in a way that minimizes DOD's liability due to environmental, safety, security, and health issues.

Developmental Test and Evaluation (DT&E): DT&E shall identify potential operational and technological capabilities and limitations of the alternative concepts and design options being pursued; support the identification and description of design technical risks; and provide data and analysis in support of the decision to certify the system ready for operational test and evaluation.

Division Capstone Exercise (DCX): DCX I and DCX II demonstrated the progress made in modernizing and digitizing Army heavy forces. The 4th Infantry Division (Mechanized) faced the world-class opposing force (OPFOR) of the National Training Center at Fort Irwin, in DCX I to emphasize digitization and continuous operations. This exercise demonstrated the degree to which the command and control of these forces has been enhanced through the advanced information technology. DCX II, at Fort Hood, TX, demonstrated the future potential of the Army's modernization and recapitalization efforts—made possible by embedding advanced technologies, especially information technology, within the 4th Infantry Division. The technologies enable the division to operate in an expanded battlespace in which they see first, understand first, act first and win decisively. These systems are programmed for fielding to the Army's Counteroffensive Corps, III Corps, and the Interim Brigade Combat Teams.

Interim Force: The Interim Force units will be highly mobile at the strategic, operational and tactical levels. They will be C-130-like transportable and equipped with a family of Interim Armored Vehicles, lightweight artillery and other available technology designed to ensure maximum lethality and survivability while increasing tactical, operational, and strategic maneuver. The Interim Force will be organized as a rapidly deployable, full-spectrum force, providing the warfighting CINCs with increased options for Small Scale Contingencies (SSCs) while not compromising readiness for Major Theater Wars (MTWs). Its design also supports rapid integration of multinational and interagency capabilities for peace keeping/peace enforcement and warfighting missions.

Joint Program Management: Any acquisition system, subsystem, component or technology program that involves a strategy that includes funding by more than one DOD component during any phase of a system's life cycle shall be defined as a joint program. Joint programs shall be consolidated and collocated at the location of the lead Component's program office, to the maximum extent practicable.

Legacy Force: Until and even after the Objective Force has begun fielding, the Legacy Force will maintain the Army's non-negotiable contract with the American people—to fight and win the nation's wars. Through selective recapitalization and modernization of equipment, the Legacy Force will have the technological superiority to win decisively in any conflict. Digitization and other initiatives instituted previously during the Force XXI process will ensure the Army retains the capability to dominate in MTW. The Legacy Force, complemented by the Interim Force as it is fielded, will be the Army's force until the Objective Force is fully fielded.

Live Fire Test and Evaluation (LFT&E): LFT&E must be conducted on a covered system, major munition program, missile program, or product improvement to a covered system, major munition program, or missile program before it can proceed beyond low-rate initial production. A covered system is any vehicle, weapon platform, or conventional weapon system that includes features designed to provide some degree of protection to users in combat and that is an ACAT I or II program. Depending upon its intended use, a commercial or non-developmental item may be a covered system, or a part of a covered system. (Change 4, 5000.2-R) Systems requiring LFT&E may not proceed beyond low-rate initial production until realistic survivability or lethality testing is completed and the report required by statute is submitted to the prescribed congressional committees.

Low-Rate Initial Production (LRIP): The objective of this activity is to produce the minimum quantity necessary to: provide production configured or representative articles for operational tests, -establish an initial production base for the system; and permit an orderly increase in the production rate for the system, sufficient to lead to full-rate production upon successful completion of operational -testing.

Major Automated Information System (MAIS) Acquisition Program: An AIS acquisition program that is (1) designated by ASD (C3I) as a MAIS, or (2) estimated to require program costs in any single year in excess of 30 million in FY96 constant dollars, total program costs in excess of 120 million in FY96 constant dollars, or total life-cycle costs in excess of 360 million in FY96 constant dollars. MAISs do not include highly sensitive classified programs.

Major Defense Acquisition Program (MDAP): An acquisition program that is not a highly sensitive classified program (as determined by the Secretary of Defense) and that is: (1) designated by the Under Secretary of Defense (Acquisition and Technology) (USD [A&T]) as an MDAP, or (2) estimated by the USD (A&T) to require an eventual total expenditure for research, development, test and evaluation of more than 355 million in FY96 constant dollars or, for procurement, of more than 2.135 billion in FY96 constant dollars.

Major Milestone: A major milestone is the decision point that separates the phases of an acquisition program. MDAP milestones include, for example, the decisions to authorize entry into the engineering and manufacturing development phase or full rate production. MAIS milestones may include, for example, the decision to begin program definition and risk reduction.

Major System: A combination of elements that shall function together to produce the capabilities required to fulfill a mission need, including hardware, equipment, software, or any combination thereof, but excluding construction or other improvements to real property. A system shall be considered a major system if it is estimated by the DOD Component Head to require an eventual total expenditure for RDT&E of more than 135 million in FY96 constant dollars, or for procurement of more than 640 million in FY96 constant dollars, or if designated as major by the DOD Component Head.

Milestone Decision Authority (MDA): The individual designated in accordance with criteria established by the USD (A&T), or by the ASD (C3I) for AIS acquisition programs, to approve entry of an acquisition program into the next phase.

Modifications: Any modification that is of sufficient cost and complexity that it could itself qualify as an ACAT I or ACAT IA program shall be considered for management purposes as a separate acquisition effort. Modifications that do not cross the ACAT I or IA threshold shall be considered part of the program being modified, unless the program is no longer in production. In that case, the modification shall be considered a separate acquisition effort. (Added from 5000.2-R)

Objective Force: The Objective Force will be equipped with significantly advanced systems centered around the Future Combat Systems (FCS). It will be a system of systems, networked internally and externally through a responsive, reliable, mobile, non-line-of-sight, and commander-and-execution-centric command and control capability. It will leverage joint/interagency reachback and Army direct downlink capabilities for intelligence, personnel and force planning, administration, technical engineering, information operations and logistical support.

Operational Support: The objectives of this activity are the execution of a support program that meets the threshold values of all support performance requirements and sustainment of them in the most life-cycle cost-effective manner. A follow-on operational testing program that assesses performance and quality, compatibility, and interoperability, and identifies deficiencies shall be conducted, as appropriate. This activity shall also include the execution of operational support plans, to include the transition from contractor to organic support, if appropriate. (Added from 5000.2-R)

Operational Test and Evaluation (OT&E): OT&E shall be structured to determine the operational effectiveness and suitability of a system under realistic conditions (e.g., combat) and to determine if the operational performance requirements have been satisfied. The following procedures are mandatory: threat or threat representative forces, targets, and threat countermeasures, validated in coordination with DIA, shall be used; typical users shall operate and maintain the system or item under conditions simulating combat stress and peacetime conditions; the independent operational test activities shall use production or production representative articles for the dedicated phase of OT&E that supports the full-rate production decision, or for ACAT IA or other acquisition programs, the deployment decision; and the use of modeling and simulation shall be considered during test planning. There are more mandatory procedures (9 total) in 5000.2-R. Either include all mandatory procedures or rewrite the definition.

For additional information on acquisition terms, or terms not defined, please refer to:

AR 70-1, Army Acquisition Policy, or

DA PAM 70-3, Army Acquisition Procedures.

1. Lockheed Martin Corporation

All Source Analysis System (ASAS)
Apache Longbow
Army Tactical Missile System (ATACMS) Blocks I and IA
Army Tactical Missile System–BAT (ATACMS-BAT) Block II
Close Combat Tactical Trainer (CCTT)
Comanche
Combat Service Support Control System (CSSCS)
Enterprise Information Systems (EIS)
Global Command and Control System–Army (GCCS-A)
Ground-Based Midcourse Segment (GBMS) of Missile Defense
Guardrail/Common Sensor (GR/CS)
Guided Multiple Launch Rocket System (GMLRS)
High Mobility Artillery Rocket System (HIMARS)
Javelin
Joint Tactical Ground Station (JTAGS)
Line-of-Sight Anti-Tank (LOSAT)
Longbow HELLFIRE
Maneuver Control System (MCS)
Medium Extended Air Defense System (MEADS)
Mortar (120mm)
Multiple Launch Rocket System (MLRS)
Night Vision (NV) Image Intensification (I2)
PATRIOT
Theater High Altitude Area Defense (THAAD) System

2. General Dynamics

Abrams
Advanced Field Artillery Tactical Data System (AFATDS)
Air Traffic Control (ATC) Systems
Area Common User System Modernization Program (ACUS MOD)
Army Common Ground Station (CGS)
Common Hardware Systems (CHS)
Crusader
Enterprise Information Systems (EIS)
Excalibur 155mm Precision-Guided Extended Range Artillery Projectile Family
Forward Area Air Defense Command and Control (FAAD C2)
Individual Combat Identification System (ICIDS)
Integrated System Control (ISYSCON) V(1)/V(2)
Interim Armored Vehicle (IAV)
Lightweight Forward Entry Device (LFED)/Forward Entry Device (FED)/Pocket-Sized Forward Entry Device (PFED)
Maneuver Control System (MCS)
Medium Caliber Armaments
Mortar (120mm)
Nuclear, Biological and Chemical Reconnaissance System (NBCRS)-Fox
Small Arms (MK 19-3)
Smoke Generator (M56 Coyote)
Tactical Exploitation System (TES)
Tactical Operations Centers (TOCs)
Tank Main Gun Ammunition
Wolverine
XM777 Joint Lightweight 155mm Howitzer (LW155)

3. Boeing

Apache Longbow
Avenger
Bradley Linebacker
CH-47 Chinook/Improved Cargo Helicopter (CH-47F)
Comanche
Ground-Based Midcourse Segment (GBMS) of Missile Defense
Kiowa Warrior

4. Raytheon

Advanced Field Artillery Tactical Data System (AFATDS)
Air Traffic Control (ATC) Systems
Army Airborne Command and Control System (A2C2S)
Crusader
Division TUAV SIGINT Program (DTSP)
Driver's Vision Enhancer (DVE)
Enhanced Position Location Reporting System (EPLRS)
Excalibur 155mm Precision-Guided Extended Range Artillery Projectile Family
Firefinder (AN/TPQ-47)
Fixed Wing
Force XXI Battle Command Brigade-and-Below (FBCB2)
Ground-Based Midcourse Segment (GBMS) of Missile Defense
Guardrail/Common Sensor (GR/CS)
Javelin
Joint LACMD Elevated Netted Sensors Systems (JLENS)
Joint Tactical Terminal (JTT)
Line-of-Sight Anti-Tank (LOSAT)
Long Range Advanced Scout Surveillance System (LRAS3)
MILSATCOM–EHF
MILSATCOM–UHF/GBS
PATRIOT
Second Generation Forward Looking Infrared (FLIR)
Sentinel
Stinger
Tactical Unmanned Aerial Vehicle (TUAV)
Tank Main Gun Ammunition
Theater High Altitude Area Defense (THAAD) System
Thermal Weapon Sight (TWS)
TOW Improved Target Acquisition System (ITAS)

5. The Carlyle Group (United Defense, L.P.)

Black Hawk
Bradley M2 Infantry/M3 Cavalry Fighting Vehicle (IFV/CFV)
Bradley Fire Support Team (BFIST) Vehicle
Bradley Linebacker
Crusader
Field Artillery Ammunition Support Vehicle (FAASV)
Grizzly
Hercules
M113 Family of Vehicles (FOV)
Mortar (120mm)
Multiple Launch Rocket System (MLRS)
Paladin
XM777 Joint Lightweight 155mm Howitzer (LW155)

6. TRW

Air/Missile Defense Planning and Control System (AMDPCS)
Comanche
Combat Service Support Control System (CSSCS)
Enterprise Information Systems (EIS)
Firefinder (AN/TPQ-47)
Force XXI Battle Command Brigade-and-Below (FBCB2)
Forward Area Air Defense Command and Control (FAAD C2)
Ground-Based Midcourse Segment (GBMS) of Missile Defense
Guardrail/Common Sensor (GR/CS)
Integrated System Control (ISYSCON) (v)4/Tactical Internet Management System (TIMS)
Joint Service Lightweight Nuclear, Biological, Chemical Reconnaissance System (JSLNBCRS)
Paladin
Tactical Operations Centers (TOCs)
Warfighter Information Network–Tactical (WIN-T) New Start

7. Government of Canada

8. Halliburton Company (Inc.)

9. Morrison Knudsen Corporation

10. Computer Sciences Corporation
Enterprise Information Systems (EIS)
Land Warrior (LW)

11. Longbow Limited Liability Corporation (Lockheed Martin and Northrop Grumman)
Longbow HELLFIRE

12. Science Applications International Corporation (SAIC)
Joint Network Management System (JNMS)

13. United Technologies Corporation
Black Hawk

14. Stewart and Stevenson Services
Family of Medium Tactical Vehicles (FMTV)
High Mobility Artillery Rocket System (HIMARS)

15. Federal Republic of Germany

16. Alliant Techsystems
Line-of-Sight Anti-Tank (LOSAT)
Objective Individual Combat Weapon (OICW)
Tank Main Gun Ammunition

17. Raytheon Lockheed Martin

18. Boeing Sikorsky Comanche Team
Comanche

19. Northrop Grumman Corporation
Air Traffic Control (ATC) Systems
Apache Longbow
Army Common Ground Station (CGS)
Army Tactical Missile System–BAT (ATACMS-BAT) Block II
Comanche
Firefinder (AN/TPQ-36 (V)8)
Force XXI Battle Command Brigade-and-Below (FBCB2)
Lightweight Laser Designator Rangefinder (LLDR)
Longbow HELLFIRE
Synthetic Aperture Radar/Moving Target Indicator (SAR/MTI)
Tactical Endurance Synthetic Aperture Radar (TESAR)
Tactical Exploitation System (TES)

20. Oshkosh Truck Corporation
Heavy Expanded Mobility Tactical Truck–Load Handling System (HEMTT-LHS)
Palletized Load System (PLS)

21. DynCorp
Fixed Wing Aircraft

22. The Renco Group, Inc.

23. Honeywell International Inc.
Army Tactical Missile System (ATACMS) Blocks I and IA
Bradley Fire Support Team (BFIST) Vehicle
CH-47 Chinook/Improved Cargo Helicopter (CH-47F)
Comanche
Crusader
Kiowa Warrior
Stinger

24. The IT Group Inc.

25. ITT Industries
Near Term Digital Radio System (NTDRS)
Night Vision (NV) Image Intensification (I2)
Single Channel Ground and Airborne Radio System (SINCGARS)

26. Bechtel Group, Inc.

27. The Mitre Corporation

28. Litton Industries
Digital Topographic Support System (DTSS)
Lightweight Laser Designator Rangefinder (LLDR)
Night Vision (NV) Image Intensification (I2)

29. Arinc, Inc.

30 The Parsons Corporation

31. General Electric
Black Hawk

32. Marconi Corporation Plc

33. Vectura Group LLC

34. Motorola, Inc.

35. Textron, Inc.
Armored Security Vehicle (ASV)
Kiowa Warrior

36. Maersk, Inc.

37. L-3 Communications Holding
Excalibur 155mm Precision-Guided Extended Range Artillery Projectile Family
Guardrail/Common Sensor (GR/CS)
Multiple Launch Rocket System (MLRS)

38. Foster Wheeler

39. Texas Instruments Incorporated

40. Engineered Support Systems, Inc.

41. GTSI

42. Johnson Controls, Inc.

43. Philipp Holzmann AG

44. Harris Corporation
Joint Tactical Ground Station (JTAGS)
Multiple Launch Rocket System (MLRS)

45. Day & Zimmermann

46. Booz-Allen & Hamilton
Lightweight Forward Entry Device (LFED)/Forward Entry Device (FED)/Pocket-Sized Forward Entry Device (PFED)

47. Unicor/Federal Prison Industries

48. Cubic Defense Systems, Inc. VE
Army Common Ground Station (CGS)

49. Dell Marketing L.P.

50. URS

Abrams
General Dynamics: Lima, OH; Muskegon, MI; Scranton, PA; Sterling Heights, MI; Tallahassee, FL; Warren, MI

Advanced Field Artillery Tactical Data System (AFATDS)
General Dynamics: Taunton, MA
Raytheon: Fort Wayne, IN

Air Traffic Control (ATC) Systems
Denro Systems: Gaithersburg, MD
Galaxy Lightbeam: Arlington, VA
General Dynamics: Huntsville, AL
Laser Guidance: Redmond, WA
Northrop Grumman Electronics Systems: Gaithersburg, MD
Raytheon Electronics Systems: Sudbury, MA
Raytheon Service Company: Lexington, KY
Raytheon Systems Company: Bedford, MA
Raytheon (Hughes/Magnavox): Ft. Wayne, IN

Air Warrior (AW)
U.S. Army: Huntsville, AL
Arthur D. Little; Foster-Miller, Inc.: Boston, MA

Airborne Reconnaissance Low (ARL)
California Microwave: Belcamp, MD

Air/Missile Defense Planning and Control System (AMDPCS)
APC: Austin, TX
Brown International: Huntsville, AL
TRW: Huntsville, AL

All Source Analysis System (ASAS)
Austin Information Systems: Austin, TX
Electronic Warfare Associates: Fairmont, WV; Herndon, VA
GTE: Taunton, MA
Lockheed Martin: Littleton, CO

Apache Longbow
Boeing: Mesa, AZ
Lockheed Martin: Orlando, FL; Owego, NY
Northrop Grumman; Linthicum, MD

Area Common User System Modernization Program (ACUS MOD)
CECOM: Ft. Monmouth, NJ
CMC Electronics: Quebec, Canada
GD/CRYPTEK: Taunton, MA
General Dynamics: Taunton, MA
Laguna Industries: Laguna, NM
LOGICON: Scottsdale, AZ

Armored Security Vehicle (ASV)
Textron: New Orleans, LA

Army Airborne Command and Control System (A2C2S)
Raytheon: Huntsville, AL
Raytheon: Fort Wayne, IN
Raytheon: Waco, TX
General Dynamics: Taunton, MA
SCI: Huntsville, AL
Cirrus Technology: Huntsville, AL

Army Battle Command System (ABCS)
ABCS is a system of systems, not a formal program.

Army Common Ground Station (CGS)
Cubic Defense Systems: San Diego, CA
General Dynamics: Scottsdale, AZ
Northrop Grumman: Melbourne, FL

Army Key Management System (AKMS)
Information Systems Support, Inc.: Bethesda, MD

Army Tactical Missile System (ATACMS) Blocks I and IA
Atlantic Research Corporation: Camden, AR
B.F. Goodrich: Vergennes, VT
Honeywell: Clearwater, FL
Lockheed Martin: Dallas, TX; Horizon City, TX

Army Tactical Missile System-BAT (ATACMS-BAT) Block II
Condor Pacific: Cheshire, CT
Lockheed Martin: Dallas, TX; Horizon City, TX
Northrop Grumman: Baltimore, MD; Huntsville, AL
Raytheon: Tucson, AZ

Automatic Chemical Agent Detector/Alarm (ACADA)
Graseby Dynamics, Ltd: Watford, U.K.

Avenger
AM General: South Bend, IN
Boeing: Huntsville, AL; Oak Ridge, TN

Biological Vaccine Program/Joint Vaccine Acquisition Program (JVAP)
DynPort, LLC: Reston, VA

Black Hawk
General Electric: Lynn, MA
GNK Westland: Tallassee, AL
United Technologies: Stratford, CT

Bradley Fire Support Team (BFIST) Vehicle
Honeywell: Clearwater, FL
Systems & Electronics, Inc.: St. Louis, MO; Sanford, FL
United Defense, L.P.: York, PA; San Jose, CA

Bradley Linebacker
Boeing: Huntsville, AL
United Defense, L.P.: San Jose, CA; York, PA

Bradley M2 Infantry/M3 Cavalry Fighting Vehicle
United Defense, L.P.: Arlington, VA; Fayette, PA; San Jose, CA; York, PA

CH-47 Chinook/Improved Cargo Helicopter (CH-47F)
Boeing: Philadelphia, PA
Honeywell: Phoenix, AZ
Robertson Aviation: Tempe, AZ
Rockwell Collins: Cedar Rapids, IA

Close Combat Tactical Trainer (CCTT)
Lockheed Martin: Orlando, FL

Comanche
Boeing and Sikorsky Team: Philadelphia, PA; Stratford, CT
Harris Corp: Melbourne, FL
Kaiser: San Jose, CA
Light Helicopter Turbine Engine Company (LHTEC), Honeywell/Rolls-Royce Team: Indianapolis, IN
Lockheed Martin: Orlando, FL
Sikorsky Aircraft: West Palm Beach, FL
Northrop Grumman: Baltimore, MD
TRW: San Diego, CA

Combat Service Support Control System (CSSCS)
General Dynamics: Taunton, MA
Lockheed Martin: Tinton Falls, NJ
TRW: Carson, CA

Common Hardware Systems (CHS)
General Dynamics: Taunton, MA

Common Missile
To be determined

Crusader
Electronic Data Systems: Herndon, VA
General Dynamics: Burlington, VT; Sterling Heights, MI
Honeywell: Albuquerque, NM
Raytheon: El Segundo, CA
Technovative Applications: Brea, CA
United Defense, L.P.: Minneapolis, MN; York, PA

Digital Topographic Support System (DTSS)
Litton/TASC: Reston, VA
Sechan Electronics: Lititz, PA
SFA: Frederick, MD

Division TUAV SIGINT Program (DTSP)
Applied Signal Technology, Inc.: Sunnyvale, CA
BAE Systems: Nashua, NH
Raytheon: Falls Church, VA

Driver's Vision Enhancer (DVE)
Raytheon: Dallas, TX

Enhanced Position Location Reporting System (EPLRS)
Raytheon: Forest, MS; Fort Wayne, IN; Fullerton, CA

Enterprise Information Systems (EIS)
ACS: Virginia Beach, VA
Computer Sciences Corporation: Morristown, NJ
COMTECH Mobile Datacom Corp: Germantown, MD
General Dynamics: Needham, MA
Harris: Palm Bay, FL
Lockheed Martin: Bethesda, MD
Lucent Technologies: Greensboro, NC
Northrup Grumman: Linthicum, MD
PriceWaterhouseCoopers: Fairfax, VA
TRW: Chester, VA & Los Angeles, CA

Excalibur 155mm Precision-Guided Extended Range Artillery Projectile Family
General Dynamics Ordnance and Tactical Systems: St. Petersburg, FL
General Dynamics Versatron: Healdsburg, CA
L-3 Communications Interstate Electronics Corporation: Anaheim, CA
L-3 KDI: Cincinnati, OH
Raytheon: Tucson, AZ

Family of Medium Tactical Vehicles (FMTV)
Stewart & Stevenson Services, Inc.: Sealy, TX

Field Artillery Ammunition Support Vehicle (FAASV)
United Defense, L.P.: York, PA

Firefinder (AN/TPQ-36 (V)8)
Northrop Grumman: Baltimore, MD; Rolling Meadows, IL

Firefinder (AN/TPQ-47)
Raytheon: El Segundo, CA; Forest, MS; Fort Wayne, IN
TRW: Carson, CA

Fixed Wing Aircraft
UC-35 Medium Range Aircraft
Cessna Aircraft Company: Witchita, KS
DynCorp: Ft. Worth, TX
Raytheon-Beechcraft: Wichita, KS
Shorts Brothers: Belfast, Ireland
Fairchild: San Antonio, TX
De Havilland Aviation: Canada
Gulfstream: Savannah; GA
Duncan: Lincoln, NE
AVTEL: Mojave, CA
Saberliner: St. Louis, MO

Force XXI Battle Command Brigade-and-Below (FBCB2)
Northrop Grumman: San Diego, CA
Paravant: Melbourne, FL
Raytheon: El Segundo, CA
TRW: Carson, CA

Forward Area Air Defense Command and Control (FAAD C2)
General Dynamics: Taunton, MA
TRW: Huntsville, AL; Redondo Beach, CA

Global Command and Control System-Army (GCCS-A)
Lockheed Martin: Springfield, VA

Global Positioning System (GPS)
Rockwell Collins: Cedar Rapids, IA
Trimble Navigation: Sunnyvale, CA

Grizzly
United Defense, L.P.: York, PA

Ground-Based Midcourse Segment (GBMS) of Missile Defense
Boeing: Huntsville, AL
Lockheed Martin: Sunnyvale, CA
Raytheon: Bedford, MA; Tucson, AZ
TRW: Huntsville, AL; Colorado Springs, CO

Guardrail/Common Sensor (GR/CS)
L-3 Communications: Salt Lake City, UT
Lockheed Martin: Owego, NY
Raytheon: Wichita: KS
TRW: Sunnyvale, CA

Guided Multiple Launch Rocket System (GMLRS)
Lockheed Martin: Dallas, TX

Heavy Expanded Mobility Tactical Truck–Load Handling System (HEMTT-LHS)
Oshkosh Truck: Oshkosh, WI

Hercules
United Defense, L.P.: York, PA

High Mobility Artillery Rocket System (HIMARS)
Lockheed Martin: Camden, AR; Dallas, TX
O'Gara-Hess & Eisenhardt: Fairfield, OH
Stewart & Stevenson Services, Inc.: Sealy, TX

High Mobility Multipurpose Wheeled Vehicle (HMMWV)
AM General: South Bend, IN
O'Gara-Hess & Eisenhardt: Fairfield, OH

Individual Combat Identification System (ICIDS)
General Dynamics: Scottsdale, AZ
Insight Technology: Manchester, NH

Integrated Meteorological System (IMETS)
Logicon: Tacoma, WA
New Mexico State University: Las Cruces, NM

Integrated System Control (ISYSCON) V(1)/V(2)
General Dynamics: Raleigh, NC; Taunton, MA
Laguna Industries: Laguna, NM

Integrated System Control (ISYSCON) (v)4/Tactical Internet Management System (TIMS)
TRW: Los Angeles, CA

Interim Armored Vehicle (IAV)
General Motors Defense: London, ONT, Canada
General Dynamics Land Systems: Sterling Heights, MI; Lima, OH; Anniston, AL

Javelin
Lockheed Martin: Orlando, FL
Raytheon: Tucson, AZ

Joint Biological Point Detection System (JBPDS)
Battelle: Columbus, OH
Intellitec: Deland, FL
MIT Lincoln Laboratories: Lexington, MA

Joint Chemical Agent Detector (JCAD)
BAE Systems: Austin, TX

Joint Land Attack Cruise Missile Defense Elevated Netted Sensors Systems (JLENS)
Raytheon: Bedford, MA

Joint Network Management System (JNMS)
SAIC: McLean, VA

Joint Service Lightweight Integrated Suit Technology (JSLIST)
Battelle: Stafford, VA
Creative Apparel: Belfast ME
Group Home Foundation: Belfast, ME
National Center for the Employment of the Disabled (NCED): El Paso, TX
Peckham Vocational Industries: Lansing, MI
South Eastern Kentucky Rehabilitation Industries (SEKRI): Corbin, KY

Joint Service Lightweight Nuclear, Biological and Chemical Reconnaissance System (JSLNBCRS)
TRW: Dominguez Hills, CA

Joint Service Lightweight Stand-off Chemical Agent Detector (JSLSCAD)
Intellitec: Deland, FL

Joint Tactical Ground Station (JTAGS)
GenCorp: Azusa, CA; Colorado Springs, CO
Gischner: Dallas Town, PA
Harris Corporation: Melbourne, FL
Lockheed Martin: Sunnyvale, CA; Boulder, CO

Joint Tactical Information Distribution System (JTIDS)/ Multifunctional Information Distribution System (MIDS)
Harris: Melbourne, FL
ViaSat Incorporated: Carlsbad, CA
Xetron: Cincinnati, OH

Joint Tactical Radio System (JTRS)
BAE Systems: Wayne, NJ

Joint Tactical Terminal (JTT)
Raytheon: St. Petersburg, FL

Joint Warning and Reporting Network (JWARN)
Bruhn NewTech, Inc.: Columbia, MD

Kiowa Warrior
Boeing: Anaheim, CA
EER Systems, Orlando, FL
Edwards: Bristol, TN
Honeywell: Albuquerque, NM
Rolls Royce/Allison Engines: Indianapolis, IN
Simula: Tempe, AZ
Textron: Fort Worth, TX

Land Warrior (LW)
Computer Science Corporation: Eatontown, NJ; Falls Church, VA
Exponent: Menlo Park, CA; Phoenix, AZ
Modern Tech: Alexandria, VA
Omega Training Group: Columbus, GA
Pacific Consultants: San Jose, CA
PEMSTAR: Rochester, MN
Sytech: Arlington, VA
Wexford Group: Vienna, VA

Lightweight Forward Entry Device (LFED)/Forward Entry Device (FED)/Pocket-Sized Forward Entry Device (PFED)
Booz-Allen Hamilton: McLean, VA
General Dynamics: Taunton, MA
TELOS: Lawton, OK

Lightweight Laser Designator Rangefinder (LLDR)
Northrop Grumman (Litton Laser Systems): Apopka, FL

Line-of-Sight Anti-Tank (LOSAT)
Alliant Tech: Rocket Center, WV
Lockheed Martin: Dallas, TX
Raytheon: Plano, TX

Long Range Advanced Scout Surveillance System (LRAS3)
DRS Optronics: Palm Bay, FL
Raytheon: McKinney, TX

Longbow HELLFIRE
Lockheed Martin: Orlando, FL
Northrop Grumman: Bethesda, MD; Huntsville, AL
Packard Hughes: Irvine, CA
Special Devices: Moorpark, CA
Stellex: Palo Alto, CA

M113 Family of Vehicles (FOV)
Anniston Army Depot: Anniston, AL
United Defense, L.P.: Anniston, AL

Maneuver Control System (MCS)
General Dynamics: Taunton, MA
Lockheed Martin: Tinton Falls, NJ

Medium Caliber Armaments
Aerojet: Jonesboro, TN
General Dynamics Ordnance and Tactical Systems: Marion, IL; Red Lion, PA; St. Petersburg, FL

Medium Extended Air Defense System (MEADS)
Lockheed Martin: Agura Hills, CA; Dallas, TX; Egan, MN; Huntsville, AL; Moorestown, NJ; Sunnyvale, CA; Syracuse, NY; Tucson, AZ
MEADS International was selected as the prime contractor to continue MEADS development during the risk reduction effort. This consortium comprises Lockheed Martin (Orlando, FL), Alenia-Marconi (Italy) and DaimlerChrysler Aerospace (Germany).

Military Satellite Communications (MILSATCOM)–EHF
Lincoln Labs: Lexington, MA
Raytheon: Largo, FL; Marlborough, MA; Virginia Beach, VA
Rockwell Collins: Richardson, TX

Military Satellite Communications (MILSATCOM)–SHF
To be determined

Military Satellite Communications (MILSATCOM)– UHF/GBS
Raytheon: Ft. Wayne, IN; Largo, FL; Marlborough/Sudbury, MA; Reston, VA

Mobile Gun System (MGS) Main Gun Ammunition
To be determined

Mortar (120mm)
Armtec: Coachella, CA
Brockway Standard: Atlanta, GA
Chamberlain Manufacturing Corporation: Scranton, PA
Crane AAA: Crane, IN
Hitech: Camden, AR
Junghans: FRG
KDI: Cincinnati, OH
Lockheed Martin: Orlando, FL; Archbald, PA
Matech: Hebron, MD
Mills Manufacturing: Ashville, NC
Pine Bluff Arsenal: Pine Bluff, AR
Pocal Industries: Scranton, PA
Primex Technologies: St. Petersburg, FL
SNC-TEC: Quebec, Canada
United Ammo Container: Milan, TN

Multiple Launch Rocket System (MLRS)
Harris: Melbourne, FL
L-3 Communications: Teterboro, NJ
Lockheed Martin: Dallas, TX
Teledyne: Lewisburg, TN
United Defense, L.P.: York, PA
Vickers: Jackson, MS

Near Term Digital Radio System (NTDRS)
BBN: Cambridge, MA
International Telephone and Telegraph (ITT): Clifton, NJ; Ft. Wayne, IN

Night Vision (NV) Image Intensification (I2) System
BAE Systems: Austin, TX
International Telephone and Telegraph (ITT): Roanoke, VA
Litton: Garland, TX; Tempe, AZ
Lockheed Martin: Nashua NH; Orlando, FL

Nuclear, Biological and Chemical Reconnaissance System (NBCRS)-Fox
General Motors Defense and General Dynamics: Anniston, AL; Detroit, MI; London, ONT, Canada
Henschel Wehrtechnik: Kassel, Germany

Objective Individual Combat Weapon (OICW)
Alliant Techsystems: Hopkins, MN

Paladin
United Defense, L.P.: York, PA
TRW: Carson City, CA

Palletized Load System (PLS)
Hyundai Precision America: San Diego, CA
Oshkosh Truck: Bradenton, FL; Oshkosh, WI
Summa Technologies: Huntsville, AL

PATRIOT
Lockheed Martin: Grand Prairie, TX
Raytheon: Bedford, MA

Profiler
Environmental Technologies Group, Inc.: Baltimore, MD
National Center for Atmospheric Research (NCAR) University Center for Atmospheric Research (UCAR): Boulder, CO
Pennsylvania State University: University Park, PA
Vaisala, Inc.: Woburn, MA
ViaSat, Inc.: Carlsbad, CA

Prophet
CACI: Wall, NJ
Titan Systems: San Diego, CA; Melbourne, FL
Rockwell Collins: Cedar Rapids, IA
Sytex: Tinton Falls, NJ

Second Generation Forward Looking Infrared (FLIR)
DRS Technology: El Segundo, CA; Palm Bay, FL
Raytheon: McKinney, TX

Sentinel
Raytheon: El Segundo, CA; Forest, MS; Largo, FL

Single Channel Ground and Airborne Radio System (SINCGARS)
International Telephone and Telegraph (ITT): Ft. Wayne, IN

Small Arms
Colt's Manufacturing: Hartford, CT
FN Manufacturing: Columbia, SC
General Dynamics: Saco, ME

Smoke Generator (M56 Coyote)
General Dynamics: Westminster, MD
Titan Systems Corporation: Melbourne, FL

Stinger
Honeywell: Minneapolis, MN
Raytheon: Tucson, AZ

Striker
Systems & Electronics, Inc.: St. Louis, MO

Synthetic Aperture Radar/Moving Target Indicator (SAR/MTI)
Northrop Grumman: Baltimore, MD

Tactical Endurance Synthetic Aperture Radar (TESAR)
Northrop Grumman: Baltimore, MD

Tactical Exploitation System (TES)
General Dynamics: Linthicum, MD
Northrop Grumman: Linthicum, MD

Tactical Operations Centers (TOCs)
General Dynamics Defense Systems: Huntsville, AL
TRW: Huntsville, AL

Tactical Unmanned Aerial Vehicle (TUAV)
AAI Corporation: Hunt Valley, MD
Inframetrics: North Billerica, MA
Raytheon: Arlington, VA
Sierra Nevada Corp.: Sparks, NV

Tank Main Gun Ammunition
Aerojet Ordnance: Jonesboro, TN
Alliant Techsystems: Clearwater, FL; Hopkins, MN; New Brighton, MN; Plymouth, MN; Radford, VA; Rocket Center, WV
American Ordnance: Burlington, IA
ARMTEC: Coachella, CA
Bulova Technologies: Lancaster, PA
General Dynamics-Ordnance and Tactical Systems: St. Petersburg, FL
Raytheon: Tucson, AZ

Theater High Altitude Area Defense (THAAD) System
Lockheed Martin: Sunnyvale, CA
Raytheon: Bedford, MA

Thermal Weapon Sight (TWS)
Aeroflex Laboratories: Farmingdale, NY
Elcan Optical Technologies: Ontario, Canada
Raytheon: Dallas, TX; Goleta, CA
SMTEK International: Thousand Oaks, CA

TOW Improved Target Acquisition System (ITAS)
Raytheon: McKinney, TX

Warfighter Information Network–Tactical (WIN-T) New Start
TRW: Carson, CA

Wolverine
General Dynamics: Sterling Heights, MI
Lima Army Tank Plant: Lima, OH
MAN GHH: Germany

XM777 Joint Lightweight 155mm Howitzer (LW155)
BAE Systems: United Kingdom
Benet Laboratory/Watervliet Arsenal: Watervliet, NY
Computing Devices Corporation: Ottawa, Canada
General Dynamics: Burlington, VT
Hydro-Mill: Chatsworth, CA
Kara Aerospace, Inc.: Bedford, PA
Major Tool and Machining: Indianapolis, IN
Rock Island Arsenal: Rock Island, IL
RTI International Metals: Niles, OH
United Defense, L.P.: Pascagoula, MI

ALABAMA

Air Traffic Control (ATC) Systems
General Dynamics: Huntsville, AL

Air Warrior (AW)
U.S. Army: Huntsville, AL

Air/Missile Defense Planning and Control System (AMDPCS)
Brown International: Huntsville, AL
TRW: Huntsville, AL

Army Airborne Command and Control System (A2C2S)
Raytheon: Huntsville, AL

Army Tactical Missile System–BAT (ATACMS-BAT) Block II
Northrop Grumman: Huntsville, AL

Avenger
Boeing: Huntsville, AL

Black Hawk
GNK Westland: Tallassee, AL

Bradley Linebacker
Boeing: Huntsville, AL

Forward Area Air Defense Command and Control (FAAD C2)
TRW: Huntsville, AL

Ground-Based Midcourse Segment (GBMS) of Missile Defense
Boeing: Huntsville, AL
TRW: Huntsville, AL

Interim Armored Vehicle (IAV)
General Dynamics Land Systems: Anniston, AL

Longbow HELLFIRE
Northrop Grumman: Huntsville, AL

M113 Family of Vehicles (FOV)
Anniston Army Depot: Anniston, AL
United Defense, L.P.: Anniston, AL

Medium Extended Air Defense System (MEADS)
Lockheed Martin: Huntsville, AL

Nuclear, Biological and Chemical Reconnaissance System (NBCRS)–Fox
General Dynamics: Anniston, AL

Palletized Load System (PLS)
Summa Technologies: Huntsville, AL

Tactical Operations Centers (TOCs)
General Dynamics Defense Systems: Huntsville, AL
TRW: Huntsville, AL

ARIZONA

Apache Longbow
Boeing: Mesa, AZ

Area Common User System Modernization Program (ACUS MOD)
LOGICON: Scottsdale, AZ

Army Common Ground Station (CGS)
General Dynamics: Scottsdale, AZ

Army Tactical Missile System-BAT (ATACMS-BAT) Block II
Raytheon: Tucson, AZ

CH-47 Chinook/Improved Cargo Helicopter (CH-47F)
Honeywell: Phoenix, AZ
Robertson Aviation: Tempe, AZ

Excalibur 155mm Precision-Guided Extended Range Artillery Projectile Family
Raytheon: Tucson, AZ

Ground-Based Midcourse Segment (GBMS) of Missile Defense
Raytheon: Tucson, AZ

Individual Combat Identification System (ICIDS)
General Dynamics, Scottsdale, AZ

Javelin
Raytheon: Tucson, AZ

Kiowa Warrior
Simula: Tempe, AZ

Land Warrior (LW)
Exponent: Phoenix, AZ

Medium Extended Air Defense System (MEADS)
Lockheed Martin: Tucson, AZ

Night Vision (NV) Image Intensification (I2) System
Northrop Grumman: Tempe, AZ

Stinger
Raytheon: Tucson, AZ

Tank Main Gun Ammunition
Raytheon: Tucson, AZ

ARKANSAS

Army Tactical Missile System (ATACMS) Blocks I and IA
Atlantic Research Corporation: Camden, AR

High Mobility Artillery Rocket System (HIMARS)
Lockheed Martin: Camden, AR

Mortar (120mm)
Hitech: Camden, AR
Pine Bluff Arsenal: Pine Bluff, AR

CALIFORNIA

Army Common Ground Station (CGS)
Cubic Defense Systems: San Diego, CA

Bradley Fire Support Team (BFIST) Vehicle
United Defense, L.P.: San Jose, CA

Bradley Linebacker
United Defense, L.P.: San Jose, CA

Bradley M2 Infantry/M3 Cavalry Fighting Vehicle
United Defense, L.P.: San Jose, CA

Comanche
Kaiser: San Jose, CA
Lockheed Martin: Sunnyvale, CA

Combat Service Support Control System (CSSCS)
TRW: Carson, CA

Crusader
Raytheon: El Segundo, CA
Technovative Applications: Brea, CA

Division TUAV SIGINT Program (DTSP)
Applied Signal Technology, Inc.: Sunnyvale, CA

Enhanced Position Location Reporting System (EPLRS)
Raytheon: Fullerton, CA

Enterprise Information Systems (EIS)
TRW: Los Angeles, CA

Excalibur 155mm Precision-Guided Extended Range Artillery Projectile Family
General Dynamics Versatron: Healdsburg, CA
L3 Communications Interstate Electronics Corporation: Anaheim, CA

Firefinder (AN/TPQ-47)
Raytheon: El Segundo, CA
TRW: Carson, CA

Fixed Wing Aircraft (UC-35 Medium Range Aircraft)
AVTEL: Mojave, CA

Force XXI Battle Command Brigade-and-Below (FBCB2)
Northrop Grumman: San Diego, CA
Raytheon: El Segundo, CA
TRW: Carson, CA

Forward Area Air Defense Command and Control (FAAD C2)
TRW: Redondo Beach, CA

Global Positioning System (GPS)
Trimble Navigation: Sunnyvale, CA

Ground-Based Midcourse Segment (GBMS) of Missile Defense
Lockheed Martin: Sunnyvale, CA

Guardrail/Common Sensor (GR/CS)
TRW: Sunnyvale, CA

ISYSCON (V)4/Tactical Internet Management System (TIMS)
TRW: Los Angeles, CA

Joint Service Lightweight Nuclear, Biological and Chemical Reconnaissance System (JSLNBCRS)
TRW: Dominguez Hills, CA

Joint Tactical Ground Station (JTAGS)
GenCorp: Azusa, CA
Lockheed Martin: Sunnyvale, CA

Joint Tactical Information Distribution System (JTIDS)/ Multifunctional Information Distribution System (MIDS)
ViaSat: Carlsbad, CA

Kiowa Warrior
Boeing: Anaheim, CA

Land Warrior (LW)
Exponent: Menlo Park, CA
Pacific Consultants: San Jose, CA

Longbow HELLFIRE
Packard Hughes: Irvine, CA
Special Devices: Moorpark, CA
Stellex: Palo Alto, CA

Medium Extended Air Defense System (MEADS)
Lockheed Martin: Agura Hills, CA; Sunnyvale, CA

Mortar (120mm)
Armtec: Coachella, CA

Paladin
TRW: Carson City, CA

Palletized Load System (PLS)
Hyundai Precision America: San Diego, CA

Profiler
ViaSat, Inc.: Carlsbad, CA

Prophet
Titan Systems: San Diego, CA

Second Generation Forward Looking Infrared (FLIR)
DRS Technology: El Segundo, CA

Sentinel
Raytheon: El Segundo, CA

Tank Main Gun Ammunition
ARMTEC: Coachella, CA

Theater High Altitude Area Defense (THAAD) System
Lockheed Martin: Sunnyvale, CA

Thermal Weapon Sight (TWS)
Raytheon: Goleta, CA
SMTEK International: Thousand Oaks, CA

Warfighter Information Network–Tactical (WIN-T) New Start
TRW: Carson, CA

XM777 Joint Lightweight 155mm Howitzer (LW155)
Hydro-Mill: Chatsworth, CA

COLORADO

All Source Analysis System (ASAS)
Lockheed Martin: Littleton, CO

Ground-Based Midcourse Segment (GBMS) of Missile Defense
TRW: Colorado Springs, CO

Joint Tactical Ground Station (JTAGS)
GenCorp: Colorado Springs, CO
Lockheed Martin: Boulder, CO

Profiler
National Center for Atmospheric Research (NCAR) University Center for Atmospheric Research (UCAR): Boulder, CO

CONNECTICUT

Army Tactical Missile System–BAT (ATACMS-BAT) Block II
Condor Pacific: Cheshire, CT

Black Hawk
United Technologies: Stratford, CT

Comanche
Boeing and Sikorsky Team: Stratford, CT

Small Arms
Colt's Manufacturing: Hartford, CT

FLORIDA

Abrams
General Dynamics: Tallahassee, FL

Apache Longbow
Lockheed Martin: Orlando, FL

Army Common Ground Station (CGS)
Northrop Grumman: Melbourne, FL

Army Key Management System (AKMS)
Group Technology Corporation: Tampa, FL

Army Tactical Missile System (ATACMS) Blocks I and IA
Honeywell: Clearwater, FL

Bradley Fire Support Team (BFIST) Vehicle
Honeywell: Clearwater, FL
Systems & Electronics, Inc.: Sanford, FL

Close Combat Tactical Trainer (CCTT)
Lockheed Martin: Orlando, FL

Comanche
Harris Corp: Melbourne, FL
Lockheed Martin: Orlando, FL
Sikorsky Aircraft: West Palm Beach, FL

Enterprise Information Systems (EIS)
Harris: Palm Bay, FL

Excalibur 155mm Precision-Guided Extended Range Artillery Projectile Family
General Dynamics Ordnance and Tactical Systems: St. Petersburg, FL

Force XXI Battle Command Brigade-and-Below (FBCB2)
Paravant: Melbourne, FL

Javelin
Lockheed Martin: Orlando, FL

Joint Biological Point Detection System (JBPDS)
Intellitec: Deland, FL

Joint Service Lightweight Stand-off Chemical Agent Detector (JSLSCAD)
Intellitec: Deland, FL

Joint Tactical Ground Station (JTAGS)
Harris Corporation: Melbourne, FL

Joint Tactical Information Distribution System (JTIDS)/ Multifunctional Information Distribution System (MIDS)
Harris: Melbourne, FL

Joint Tactical Terminal (JTT)
Raytheon: St. Petersburg, FL

Kiowa Warrior
EER Systems, Orlando, FL

Lightweight Forward Entry Device (LFED)/Forward Entry Device (FED)/Pocket-Sized Forward Entry Device (PFED)
Talla-Tech: Tallahassee, FL

Lightweight Laser Designator Rangefinder (LLDR)
Northrop Grumman (Litton Laser Systems): Apopka, FL

Long Range Advanced Scout Surveillance System (LRAS3)
DRS Optronics: Palm Bay, FL

Longbow HELLFIRE
Lockheed Martin: Orlando, FL

Medium Caliber Armaments
General Dynamics Ordnance and Tactical Systems: St. Petersburg, FL

Medium Extended Air Defense System (MEADS)
Lockheed Martin: Orlando, FL

Military Satellite Communications (MILSATCOM)–EHF
Raytheon: Largo, FL

Military Satellite Communications (MILSATCOM)– UHF/GBS
Raytheon: Largo, FL

Mortar (120mm)
Lockheed Martin: Orlando, FL
Primex Technologies (GD OTS): St. Petersburg, FL

Multiple Launch Rocket System (MLRS)
Harris: Melbourne, FL

Night Vision (NV) Image Intensification (I2) System
Lockheed Martin: Orlando, FL

Palletized Load System (PLS)
Oshkosh Truck: Bradenton, FL

Prophet
Titan Systems: Melbourne, FL

Second Generation Forward Looking Infrared (FLIR)
DRS Technology: Palm Bay, FL

Sentinel
Raytheon: Largo, FL

Smoke Generator (M56 Coyote)
Titan Systems Corporation: Melbourne, FL

Tank Main Gun Ammunition
Alliant Techsystems: Clearwater, FL
General Dynamics-Ordnance and Tactical Systems: St. Petersburg, FL

GEORGIA

Fixed Wing Aircraft (UC-35 Medium Range Aircraft)
Gulfstream: Savannah; GA

Land Warrior (LW)
Omega Training Group: Columbus, GA

Mortar (120mm)
Brockway Standard: Atlanta, GA

ILLINOIS

Firefinder (AN/TPQ-36 (V)8)
Northrop Grumman: Rolling Meadows, IL

Medium Caliber Armaments
General Dynamics Ordnance and Tactical Systems: Marion, IL

XM777 Joint Lightweight 155mm Howitzer (LW155)
Rock Island Arsenal: Rock Island, IL

INDIANA

Advanced Field Artillery Tactical Data System (AFATDS)
Raytheon: Ft. Wayne, IN

Air Traffic Control (ATC) Systems
Raytheon (Hughes/Magnavox): Ft. Wayne, IN

Army Airborne Command and Control System (A2C2S)
Raytheon: Ft. Wayne, IN

Avenger
AM General: South Bend, IN

Comanche
Light Helicopter Turbine Engine Company (LHTEC), Honeywell/Rolls-Royce Team: Indianapolis, IN

Enhanced Position Location Reporting System (EPLRS)
Raytheon: Ft. Wayne, IN

Firefinder (AN/TPQ-47)
Raytheon: Ft. Wayne, IN

High Mobility Multipurpose Wheeled Vehicle (HMMWV)
AM General: South Bend, IN

Kiowa Warrior
Rolls Royce/Allison Engines: Indianapolis, IN

Military Satellite Communications (MILSATCOM)–UHF/GBS
Raytheon: Ft. Wayne, IN

Mortar (120mm)
Crane AAA: Crane, IN

Near Term Digital Radio System (NTDRS)
International Telephone and Telegraph (ITT): Ft. Wayne, IN

Single Channel Ground and Airborne Radio System (SINCGARS)
International Telephone and Telegraph (ITT): Ft. Wayne, IN

XM777 Joint Lightweight 155mm Howitzer (LW155)
Major Tool and Machining: Indianapolis, IN

IOWA

CH-47 Chinook/Improved Cargo Helicopter (CH-47F)
Rockwell Collins: Cedar Rapids, IA

Global Positioning System (GPS)
Rockwell Collins: Cedar Rapids, IA

Prophet
Rockwell Collins: Cedar Rapids, IA

Tank Main Gun Ammunition
American Ordnance: Burlington, IA

KANSAS

Fixed Wing Aircraft (UC-35 Medium Range Aircraft)
Cessna Aircraft Company: Witchita, KS
Raytheon-Beechcraft: Wichita, KS

Guardrail/Common Sensor (GR/CS)
Raytheon: Wichita: KS

KENTUCKY

Air Traffic Control (ATC) Systems
Raytheon Service Company: Lexington, KY

Joint Service Lightweight Integrated Suit Technology (JSLIST)
South Eastern Kentucky Rehabilitation Industries (SEKRI): Corbin, KY

LOUISIANA

Armored Security Vehicle (ASV)
Textron: New Orleans, LA

MAINE

Joint Service Lightweight Integrated Suit Technology (JSLIST)
Creative Apparel: Belfast, ME
Group Home Foundation: Belfast, ME

Small Arms
General Dynamics: Saco, ME

MARYLAND

Airborne Reconnaissance Low (ARL)
California Microwave: Belcamp, MD

Air Traffic Control (ATC) Systems
Denro Systems: Gaithersburg, MD
Northrop Grumman Electronics Systems: Gaithersburg, MD

Apache Longbow
Northrop Grumman: Linthicum, MD

Army Key Management System (AKMS)
Information Systems Support, Inc.: Bethesda, MD

Army Tactical Missile System–BAT (ATACMS-BAT) Block II
Northrop Grumman: Baltimore, MD

Comanche
Northrop Grumman: Baltimore, MD

Digital Topographic Support System (DTSS)
SFA: Frederick, MD

Enterprise Information Systems (EIS)
COMTECH Mobile Datacom Corp: Germantown, MD
Lockheed Martin: Bethesda, MD
Northrup Grumman: Linthicum, MD

Firefinder (AN/TPQ-36 (V)8)
Northrop Grumman: Baltimore, MD

Joint Warning and Reporting Network (JWARN)
Bruhn NewTech, Inc.: Columbia, MD

Longbow HELLFIRE
Northrop Grumman: Bethesda, MD

Mortar (120mm)
Matech: Hebron, MD

Profiler
Environmental Technologies Group, Inc.: Baltimore, MD

Smoke Generator (M56 Coyote)
General Dynamics: Westminster, MD

Synthetic Aperture Radar/Moving Target Indicator (SAR/MTI)
Northrop Grumman: Baltimore, MD

Tactical Endurance Synthetic Aperture Radar (TESAR)
Northrop Grumman: Baltimore, MD

Tactical Exploitation System (TES)
General Dynamics: Linthicum, MD
Northrop Grumman: Linthicum, MD

Tactical Unmanned Aerial Vehicle (TUAV)
AAI Corporation: Hunt Valley, MD

MASSACHUSETTS

Advanced Field Artillery Tactical Data System (AFATDS)
General Dynamics: Taunton, MA

Air Traffic Control (ATC) Systems
Raytheon Electronics Systems: Sudbury, MA
Raytheon Systems Company: Bedford, MA

Air Warrior (AW)
Arthur D. Little; Foster-Miller, Inc.: Boston, MA

All Source Analysis System (ASAS)
GTE: Taunton, MA

Area Common User System Modernization Program (ACUS MOD)
GD/CRYPTEK: Taunton, MA
General Dynamics: Taunton, MA

Army Airborne Command and Control System (A2C2S)
General Dynamics: Taunton, MA

Black Hawk
General Electric: Lynn, MA

Combat Service Support Control System (CSSCS)
General Dynamics: Taunton, MA

Common Hardware Systems (CHS)
General Dynamics: Taunton, MA

Enterprise Information Systems (EIS)
General Dynamics: Needham, MA

Forward Area Air Defense Command and Control (FAAD C2)
General Dynamics: Taunton, MA

Ground-Based Midcourse Segment (GBMS) of Missile Defense
Raytheon: Bedford, MA

Integrated System Control (ISYSCON) V(1)/V(2)
General Dynamics: Taunton, MA

Joint Biological Point Detection System (JBPDS)
MIT Lincoln Laboratories: Lexington, MA

Joint Land Attack Cruise Missile Defense Elevated Netted Sensors Systems (JLENS)
Raytheon: Bedford, MA

Lightweight Forward Entry Device (LFED)/Forward Entry Device (FED)/Pocket-Sized Forward Entry Device (PFED)
General Dynamics: Taunton, MA

Maneuver Control System (MCS)
General Dynamics: Taunton, MA

Military Satellite Communications (MILSATCOM)–EHF
Lincoln Labs: Lexington, MA
Raytheon: Marlborough, MA

Military Satellite Communications (MILSATCOM)–UHF/GBS
Raytheon: Marlborough/Sudbury, MA

Near Term Digital Radio System (NTDRS)
BBN: Cambridge, MA

PATRIOT
Raytheon: Bedford, MA

Profiler
Vaisala, Inc.: Woburn, MA

Tactical Unmanned Aerial Vehicle (TUAV)
Inframetrics: North Billerica, MA

Theater High Altitude Area Defense (THAAD) System
Raytheon: Bedford, MA

MICHIGAN

Abrams
General Dynamics: Muskegon, MI; Sterling Heights, MI; Warren, MI

Crusader
General Dynamics: Sterling Heights, MI

Interim Armored Vehicle (IAV)
General Dynamics Land Systems: Sterling Heights, MI

Joint Service Lightweight Integrated Suit Technology (JSLIST)
Peckham Vocational Industries: Lansing, MI

Nuclear, Biological and Chemical Reconnaissance System (NBCRS)-Fox
General Dynamics: Detroit, MI

Wolverine
General Dynamics: Sterling Heights, MI

XM777 Joint Lightweight 155mm Howitzer (LW155)
United Defense, L.P.: Pascagoula, MI

MINNESOTA

Crusader
United Defense, L.P.: Minneapolis, MN

Land Warrior (LW)
PEMSTAR: Rochester, MN

Medium Extended Air Defense System (MEADS)
Lockheed Martin: Egan, MN

Objective Individual Combat Weapon (OICW)
Alliant Techsystems: Hopkins, MN

Stinger
Honeywell: Minneapolis, MN

Tank Main Gun Ammunition
Alliant Techsystems: Hopkins, MN; New Brighton, MN; Plymouth, MN

MISSISSIPPI

Enhanced Position Location Reporting System (EPLRS)
Raytheon: Forest, MS

Firefinder (AN/TPQ-47)
Raytheon: Forest, MS

Multiple Launch Rocket System (MLRS)
Vickers: Jackson, MS

Sentinel
Raytheon: Forest, MS

MISSOURI

Bradley Fire Support Team (BFIST) Vehicle
Systems & Electronics, Inc.: St. Louis, MO

Fixed Wing Aircraft (UC-35 Medium Range Aircraft)
Saberliner: St. Louis, MO

Striker
Systems & Electronics, Inc.: St. Louis, MO

NEBRASKA

Fixed Wing Aircraft (UC-35 Medium Range Aircraft)
Duncan: Lincoln, NE

NEVADA

Tactical Unmanned Aerial Vehicle (TUAV)
Sierra Nevada Corp.: Sparks, NV

NEW HAMPSHIRE

Division TUAV SIGINT Program (DTSP)
BAE Systems: Nashua, NH

Individual Combat Identification System (ICIDS)
Insight Technology, Inc.: Manchester, NH

Night Vision (NV) Image Intensification (I2) System
Lockheed Martin: Nashua, NH
Insight Technology, Inc.: Londonderry, NH

NEW JERSEY

Area Common User System Modernization Program (ACUS MOD)
CECOM: Ft. Monmouth, NJ

Combat Service Support Control System (CSSCS)
Lockheed Martin: Tinton Falls, NJ

Enterprise Information Systems (EIS)
Computer Sciences Corporation: Morristown, NJ

Joint Tactical Radio System (JTRS)
BAE Systems: Wayne, NJ

Land Warrior (LW)
Computer Science Corporation: Eatontown, NJ

Maneuver Control System (MCS)
Lockheed Martin: Tinton Falls, NJ

Medium Extended Air Defense System (MEADS)
Lockheed Martin: Moorestown, NJ

Multiple Launch Rocket System (MLRS)
L-3 Communications: Teterboro, NJ

Near Term Digital Radio System (NTDRS)
International Telephone and Telegraph (ITT): Clifton, NJ

Prophet
CACI: Wall, NJ
Sytex: Tinton Falls, NJ

NEW MEXICO

Area Common User System Modernization Program (ACUS MOD)
Laguna Industries: Laguna, NM

Crusader
Honeywell: Albuquerque, NM

Integrated Meteorological System (IMETS)
New Mexico State University: Las Cruces, NM

Integrated System Control (ISYSCON) V(1)/V(2)
Laguna Industries: Laguna, NM

Kiowa Warrior
Honeywell: Albuquerque, NM

NEW YORK

Apache Longbow
Lockheed Martin: Owego, NY

Guardrail/Common Sensor (GR/CS)
Lockheed Martin: Owego, NY

Medium Extended Air Defense System (MEADS)
Lockheed Martin: Syracuse, NY

Thermal Weapon Sight (TWS)
Aeroflex Laboratories: Farmingdale, NY

XM777 Joint Lightweight 155mm Howitzer (LW155)
Benet Laboratory/Watervliet Arsenal: Watervliet, NY

NORTH CAROLINA

Enterprise Information Systems (EIS)
Lucent Technologies: Greensboro, NC

Integrated System Control (ISYSCON) V(1)/V(2)
General Dynamics: Raleigh, NC

Mortar (120mm)
Mills Manufacturing: Ashville, NC

OHIO

Abrams
General Dynamics: Lima, OH

Excalibur 155mm Precision-Guided Extended Range Artillery Projectile Family
L-3 KDI: Cincinnati, OH

High Mobility Artillery Rocket System (HIMARS)
O'Gara-Hess & Eisenhardt: Fairfield, OH

High Mobility Multipurpose Wheeled Vehicle (HMMWV)
O'Gara-Hess & Eisenhardt: Fairfield, OH

Interim Armored Vehicle (IAV)
General Dynamics Land Systems: Lima, OH

Joint Biological Point Detection System (JBPDS)
Battelle: Columbus, OH

Joint Tactical Information Distribution System (JTIDS)/ Multifunctional Information Distribution System (MIDS)
Xetron: Cincinnati, OH

Mortar (120mm)
KDI: Cincinnati, OH

Wolverine
Lima Army Tank Plant: Lima, OH

XM777 Joint Lightweight 155mm Howitzer (LW155)
RTI International Metals: Niles, OH

OKLAHOMA

Lightweight Forward Entry Device (LFED)/Forward Entry Device (FED)/Pocket-Sized Forward Entry Device (PFED)
TELOS: Lawton, OK

PENNSYLVANIA

Abrams
General Dynamics: Scranton, PA

Bradley Fire Support Team (BFIST) Vehicle
United Defense, L.P.: York, PA

Bradley Linebacker
United Defense, L.P.: York, PA

Bradley M2 Infantry/M3 Cavalry Fighting Vehicle
United Defense, L.P.: Fayette, PA; York, PA

CH-47 Chinook/Improved Cargo Helicopter (CH-47F)
Boeing: Philadelphia, PA

Comanche
Boeing and Sikorsky Team: Philadelphia, PA

Crusader
United Defense, L.P.: York, PA

Digital Topographic Support System (DTSS)
Sechan Electronics: Lititz, PA

Field Artillery Ammunition Support Vehicle (FAASV)
United Defense, L.P.: York, PA

Grizzly
United Defense, L.P.: York, PA

Hercules
United Defense, L.P.: York, PA

Joint Tactical Ground Station (JTAGS)
Gischner: Dallas Town, PA

Medium Caliber Armaments
General Dynamics Ordnance and Tactical Systems: Red Lion, PA

Mortar (120mm)
Chamberlain Manufacturing Corporation: Scranton, PA
Lockheed Martin: Archbald, PA
Pocal Industries: Scranton, PA

Multiple Launch Rocket System (MLRS)
United Defense, L.P.: York, PA

Paladin
United Defense, L.P.: York, PA

Profiler
Pennsylvania State University: University Park, PA

Tank Main Gun Ammunition
Bulova Technologies: Lancaster, PA

XM777 Joint Lightweight 155mm Howitzer (LW155)
Kara Aerospace, Inc.: Bedford, PA

SOUTH CAROLINA

Small Arms
FN Manufacturing: Columbia, SC

TENNESSEE

Avenger
Boeing: Oak Ridge, TN

Kiowa Warrior
Edwards: Bristol, TN

Medium Caliber Armaments
Aerojet: Jonesboro, TN

Mortar (120mm)
United Ammo Container: Milan, TN

Multiple Launch Rocket System (MLRS)
Teledyne: Lewisburg, TN

Tank Main Gun Ammunition
Aerojet Ordnance: Jonesboro, TN

TEXAS

Air/Missile Defense Planning and Control System (AMDPCS)
APC: Austin, TX

All Source Analysis System (ASAS)
Austin Information Systems: Austin, TX

Army Airborne Command and Control System (A2C2S)
Raytheon: Waco, TX

Army Tactical Missile System (ATACMS) Blocks I and IA
Lockheed Martin: Dallas, TX; Horizon City, TX

Army Tactical Missile System-BAT (ATACMS-BAT) Block II
Lockheed Martin: Dallas, TX; Horizon City, TX

Driver's Vision Enhancer (DVE)
Raytheon: Dallas, TX

Family of Medium Tactical Vehicles (FMTV)
Stewart & Stevenson Services, Inc.: Sealy, TX

Fixed Wing Aircraft (UC-35 Medium Range Aircraft)
DynCorp: Ft. Worth, TX
Fairchild: San Antonio, TX

Guided Multiple Launch Rocket System (GMLRS)
Lockheed Martin: Dallas, TX

High Mobility Artillery Rocket System (HIMARS)
Lockheed Martin: Dallas, TX
Stewart & Stevenson, Inc.: Sealy, TX

Joint Chemical Agent Detector (JCAD)
BAE Systems: Austin, TX

Joint Service Lightweight Integrated Suit Technology (JSLIST)
National Center for the Employment of the Disabled (NCED): El Paso, TX

Kiowa Warrior
Textron: Ft. Worth, TX

Line-of-Sight Anti-Tank (LOSAT)
Lockheed Martin: Dallas, TX
Raytheon: Plano, TX

Long Range Advanced Scout Surveillance System (LRAS3)
Raytheon: McKinney, TX

Medium Extended Air Defense System (MEADS)
Lockheed Martin: Dallas, TX

Military Satellite Communications (MILSATCOM)–EHF
Rockwell Collins: Richardson, TX

Multiple Launch Rocket System (MLRS)
Lockheed Martin: Dallas, TX

Night Vision (NV) Image Intensification (I2) System
BAE Systems: Austin, TX
Northrop Grumman: Garland, TX

PATRIOT
Lockheed Martin: Grand Prairie, TX

Second Generation Forward Looking Infrared (FLIR)
Raytheon: McKinney, TX

Thermal Weapon Sight (TWS)
Raytheon: Dallas, TX

TOW Improved Target Acquisition System (ITAS)
Raytheon: McKinney, TX

UTAH

Guardrail/Common Sensor (GR/CS)
L-3 Communications: Salt Lake City, UT

VERMONT

Army Tactical Missile System (ATACMS) Blocks I and IA
B.F. Goodrich: Vergennes, VT

Crusader
General Dynamics: Burlington, VT

XM777 Joint Lightweight 155mm Howitzer (LW155)
General Dynamics: Burlington, VT

VIRGINIA

Air Traffic Control (ATC) Systems
Galaxy Lightbeam: Arlington, VA

All Source Analysis System (ASAS)
Electronic Warfare Associates: Herndon, VA

Army Airborne Command and Control System (A2C2S)
A2C2S development is a collaboration of government agencies including U.S. Army Communications– Electronics Command (CECOM), Army Armament Munitions Chemical Command (AMCOM), and Applied Aviation Technology Directorate (AATD) with the bulk of prototype development being completed by AATD in Ft. Eustis, VA.

Biological Vaccine Program/Joint Vaccine Acquisition Program (JVAP)
DynPort, LLC: Reston, VA

Bradley M2 Infantry/M3 Cavalry Fighting Vehicle
United Defense, L.P.: Arlington, VA

Crusader
Electronic Data Systems: Herndon, VA

Digital Topographic Support System (DTSS)
Litton/TASC: Reston, VA

Division TUAV SIGINT Program (DTSP)
Raytheon: Falls Church, VA

Enterprise Information Systems (EIS)
ACS: Virginia Beach, VA
PriceWaterhouseCoopers: Fairfax, VA
TRW: Chester, VA

Global Command and Control System-Army (GCCS-A)
Lockheed Martin: Springfield, VA

Joint Network Management System (JNMS)
SAIC: McLean, VA

Joint Service Lightweight Integrated Suit Technology (JSLIST)
Battelle: Stafford, VA

Land Warrior (LW)
Computer Science Corporation: Falls Church, VA
Modern Tech: Alexandria, VA
Sytech: Arlington, VA
Wexford Group: Vienna, VA

Lightweight Forward Entry Device (LFED)/Forward Entry Device (FED)/Pocket-Sized Forward Entry Device (PFED)
Booz-Allen Hamilton: McLean, VA

Military Satellite Communications (MILSATCOM)–EHF
Raytheon: Virginia Beach, VA

Military Satellite Communications (MILSATCOM)– UHF/GBS
Raytheon: Reston, VA

Night Vision (NV) Image Intensification (I2) System
International Telephone and Telegraph (ITT): Roanoke, VA

Tactical Unmanned Aerial Vehicle (TUAV)
Raytheon: Arlington, VA

Tank Main Gun Ammunition
Alliant Techsystems: Radford, VA

WASHINGTON

Air Traffic Control (ATC) Systems
Laser Guidance: Redmond, WA

Integrated Meteorological System (IMETS)
Logicon: Tacoma, WA

WEST VIRGINIA

All Source Analysis System (ASAS)
Electronic Warfare Associates: Fairmont, WV

Line-of-Sight Anti-Tank (LOSAT)
Alliant Tech: Rocket Center, WV

Tank Main Gun Ammunition
Alliant Techsystems: Rocket Center, WV

WISCONSIN

Heavy Expanded Mobility Tactical Truck–Load Handling System (HEMTT-LHS)
Oshkosh Truck: Oshkosh, WI

Palletized Load System (PLS)
Oshkosh Truck: Oshkosh, WI

OTHER COUNTRIES

CANADA

Area Common User System Modernization Program (ACUS MOD)
CMC Electronics: Quebec, Canada

Fixed Wing Aircraft (UC-35 Medium Range Aircraft)
De Havilland Aviation: Canada

Interim Armored Vehicle (IAV)
General Motors Defense: Ontario, Canada)

Mortar (120mm)
SNC-TEC: Quebec, Canada

Nuclear, Biological and Chemical Reconnaissance System (NBCRS)-Fox
General Motors Defense and General Dynamics: London, ONT, Canada

Thermal Weapon Sight (TWS)
Elcan Optical Technologies: Ontario, Canada

XM777 Joint Lightweight 155mm Howitzer (LW155)
Computing Devices Corporation: Ottawa, Canada

GERMANY

Medium Extended Air Defense System (MEADS)
MEADS International consortium comprises Lockheed Martin (Orlando, FL), Alenia-Marconi (Italy) and DaimlerChrysler Aerospace (Germany).

Mortar (120mm)
Junghans: FRG
Nuclear, Biological and Chemical Reconnaissance System (NBCRS)-Fox
Henschel Wehrtechnik: Kassel, Germany

Wolverine
MAN GHH: Germany

IRELAND

Fixed Wing Aircraft (UC-35 Medium Range Aircraft)
Shorts Brothers: Belfast, Ireland

ITALY

Medium Extended Air Defense System (MEADS)
MEADS International consortium comprises Lockheed Martin (Orlando, FL), Alenia-Marconi (Italy) and DaimlerChrysler Aerospace (Germany).

UNITED KINGDOM

Automatic Chemical Agent Detector/Alarm (ACADA)
Graseby Dynamics, Ltd: Watford, U.K.

Interim Armored Vehicle (IAV)
General Motors Defense: London, U. K.

XM777 Joint Lightweight 155mm Howitzer (LW155)
BAE Systems: U.K.

Abrams
Abrams Tank System
Project Manager
ATTN: SFAE–GCSS-AB
Warren, MI 48397-5000

Abrams Main Gun Ammunition
Tank and Medium-caliber Armament Systems
Project Manager
ATTN: SFAE–GCSS-TMA
Picatinny Arsenal, NJ 07806-5000

Advanced Field Artillery Tactical Data System (AFATDS)
Product Manager Advanced Field Artillery Tactical Data System (AFATDS)
Project Manager Effects and Fires Command and Control Systems (PM EFCCS)
ATTN: SFAE–C3S-EF
Ft. Monmouth, NJ 07703

Aerial Common Sensor (ACS)
Signals Warfare
Project Manager
SFAE-C3S-INT
Building 296, Main Post
Ft. Monmouth, NJ 07703-5040

Air Traffic Control (ATC) Systems
Product Manager, Air Traffic Control
Attn: AMSAM-DSA-AS-ATC
Building 5308
Redstone Arsenal, AL 35898-5000

Air Warrior (AW)
Project Management Office,
Aircrew Integrated Systems (PM ACIS)
Project Manager
Soldier Systems
Redstone Arsenal, AL 35898

Air/Missile Defense Planning and Control System (AMDPCS)
Air Defense Command and Control Systems (PM ADCCS)
Project Manager
ATTN: SFAE–C3S-AD
Redstone Arsenal, AL 35898-5600

Airborne Reconnaissance Low (ARL)
Signals Warfare
Project Manager
SFAE-C3S-INT
Building 296, Main Post
Ft. Monmouth, NJ 07703-5040

All Source Analysis System (ASAS)
Product Manager
Project Manager Intel Fusion
ATTN: SFAE–C3S-INT
1616 Anderson Road
Ft. Belvoir, VA 22060

Apache Longbow
Longbow Apache
Product Manager
ATTN: SFAE–AV-AAH
Building 5681
Redstone Arsenal, AL 35898

Area Common User System Modernization Program (ACUS MOD)
Project Manager, Warfighter Information Network–Tactical (PM WIN-T)
ATTN: -SFAE-C3S-WIN
Bldg 744
Ft. Monmouth, NJ 07703-5506

Armored Security Vehicle (ASV)
Light Tactical Vehicles
Project Manager
ATTN: AMSTA–DSA-LV
Warren, MI, 48397-5000

Army Airborne Command and Control System (A2C2S)
Project Manager, Tactical Operations Centers/Air and Missile Defense Command and Control Systems (PM TOCs/AMDCCS)
ATTN: SFAE-C3S-AD-A2
145 Research Blvd.
Madison, AL 35758

Army Battle Command System (ABCS)
Program Executive Office for Command, Control and Communications Tactical (PEO C3T)
ATTN: SFAE-C3S
Bldg 2700 Albert J Meyer Ctr
Ft. Monmouth, NJ 07703-5401

Army Common Ground Station (CGS)
Joint STARS
Project Manager
SFAE-IEW&S-JS
Ft. Monmouth, NJ 07703-5304

Army Key Management System (AKMS)
Warfighter Information Network–Tactical (PM WIN-T)
Project Manager
ATTN: SFAE–C3S-WIN
Building 744
Ft. Monmouth, NJ 07703-5506

Army Tactical Missile System (ATACMS) Blocks I and IA
Army TACMS
Project Manager
ATTN: SFAE–MSL-AB
Redstone Arsenal, AL 35898-5650

Army Tactical Missile System-BAT (ATACMS-BAT) Block II
Army TACMS-BAT
Project Manager
ATTN: SFAE–MSL-AB
Redstone Arsenal, AL 35898-5650

Automatic Chemical Agent Detector/Alarm (ACADA)
NBC Defense Systems
Project Manager
ATTN: AMSSB–PM-RNN
Aberdeen, MD 21010-5423

Avenger
U.S. Army Aviation and Missile Command
Attn: AMSAM–DSA-SH
Redstone Arsenal, AL 35898-5000

Biological Vaccine Program/Joint Vaccine Acquisition Program (JVAP)
Joint Program Office for Biological Defense Systems
ATTN: SFAE–BD/Skyline
35201 Leesburg Pike
Falls Church, VA 22041-3203

Black Hawk
Utility Helicopters
Project Manager
U.S. Army Aviation and Missile Command
ATTN: AMSAM–DSA-UH
Building 5308
Redstone Arsenal, AL 35898

Bradley Fire Support Team (BFIST) Vehicle
Bradley Fire Support Team
Product Manager
ATTN: SFAE–GCSS-BV
Warren, MI 48397-5000

Bradley Linebacker
Bradley Linebacker
Product Manager
ATTN: SFAE–GCSS-BV
Warren, MI 48397-5000

Bradley M2 Infantry/M3 Cavalry Fighting Vehicle
Bradley Fighting Vehicle System
Product Manager
ATTN: SFAE–GCSS-W-BV
Warren, MI 48397-5000

CH-47 Chinook/Improved Cargo Helicopter (CH-47F)
Cargo Helicopters
Project Manager
ATTN: SFAE–AV-CH
Building 5681
Redstone Arsenal, AL 35898

Close Combat Tactical Trainer (CCTT)
Combined Arms Tactical Trainer
Project Manager
ATTN: AMSTI–CCTT
12350 Research Parkway
Orlando, FL 32826-3276

Comanche
Comanche
Project Manager
ATTN: SFAE–AV-RAH
Building 5681
Redstone Arsenal, AL 35898

Combat Service Support Control System (CSSCS)
Project Manager Army Tactical
Command & Control System (ATCCS)
Product Manager
ATTN: SFAE–C3S-STR
6052 Meade Road, Suite 103
Ft. Belvoir, VA 22060

Common Hardware Systems (CHS)
Project Manager Army Tactical
Command & Control System (ATCCS)
Project Manager
SFAE-C3S-AT
Ft. Monmouth, NJ 07703-5402

Common Missile
Common Missile
Program Executive Officer, Tactical
Missiles
ATTN: SFAE-MSL
Redstone Arsenal, AL 35898-8000

Crusader
Crusader
Project Manager
ATTN: SFAE–GCSS-CR
Picatinny Arsenal, NJ 07806-5000

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A

Abrams 194

Advanced Field Artillery Tactical Data System (AFATDS) 8

Advanced Medical Technology/Telemedicine Research Program 255

Advanced Night Vision Goggles (ANVG) ATD 248

Advanced Simulation 264

Aerial Common Sensor (ACS) 10

Agile Commander ATD 250

Air Traffic Control (ATC) Systems 14

Air Warrior (AW) 16

Air/Missile Defense Planning and Control System (AMDPCS) 18

Airborne Reconnaissance Low (ARL) 12

All Source Analysis System (ASAS) 20

Apache Longbow 196

Appendices 267

Area Common User System Modernization Program (ACUS MOD) 22

Armored Security Vehicle (ASV) 224

Army Airborne Command and Control System (A2C2S) 24

Army Battle Command System (ABCS) 26

Army Combat Organizations 269

Army Common Ground Station (ACGS) 28

Army Key Management System (AKMS) 30

Army Tactical Missile System (ATACMS) Blocks I and IA 32

Army Tactical Missile System - BAT (ATACMS-BAT) Block II 34

Automatic Chemical Agent Detector/Alarm (ACADA) 36

Avenger 226

B

Ballistic Protection for FCS 247

Battlespace Terrain Reasoning and Awareness (BTRA) 249

Biological Vaccine Program/Joint Vaccine Acquisition Program (JVAP) 38

Black Hawk (UH-60) 198

Bradley Fire Support Team (BFIST) Vehicle 200

Bradley Linebacker 228

Bradley M2 Infantry/M3 Cavalry Fighting Vehicle 202

C

CH-47 Chinook/Improved Cargo Helicopter (CH-47F) 204

Close Combat Tactical Trainer (CCTT) 40

Comanche 42

Combat Casualty Care 252

Combat Service Support Control System (CSSCS) 44

Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) 249

Common Hardware Systems (CHS) 46

Common Missile 48

Compact Kinetic Energy Missile Technology ATD 247

Congressionally Directed Medical Research Programs 257

Corps of Engineers Research and Development (R&D) 260

Crusader 50

D

Digital Topographic Support System (DTSS) 52

Division TUAV-SIGINT Program (DTSP) 54

Driver's Vision Enhancer (DVE) 56

E

Enhanced Coastal Trafficability and Sea State Mitigation (ECT/SSM) ATD 261

Enhanced Position Location Reporting System (EPLRS) 230

Enterprise Information Systems (EIS) 58

Excalibur 155mm Precision-Guided Extended Range Artillery Projectile Family 60

F

Family of Medium Tactical Vehicles (FMTV) 62

FCS Mine Detection and Neutralization 247

Field Artillery Ammunition Support Vehicle (FAASV) 206

Firefinder (AN/TPQ-36 (V)8) 208

Firefinder (AN/TPQ-47) 64

Fixed Wing 232

Force Health Protection and Combat Health Support 252

Force XXI Battle Command Brigade-and-Below (FBCB2) 66

Forward Area Air Defense Command and Control (FAAD C2) 68

Full Spectrum Active Protection System (FSAP) 250

Future Combat Systems (FCS) 246

Future Warrior Technology 258

G

Global Command and Control System–Army (GCCS-A) 70

Global Positioning System (GPS) 72

Glossary 271

Ground-Based Midcourse Segment (GBMS) of Missile Defense 74

Guardrail/Common Sensor (GR/CS) 76

Guided Multiple Launch Rocket System (GMLRS) 78

Gulf War Illness 255

H

Hazardous Waste Remediation of Army Sites 262

Heavy Expanded Mobility Tactical Truck-Load Handling System (HEMTT-LHS) 210

Hercules 212

High Mobility Artillery Rocket System (HIMARS) 80

High Mobility Multipurpose Wheeled Vehicle (HMMWV) 214

How to Use this Book VIII

Hunter Standoff Killer Team (HSKT) 257

I

Index 299

Individual Combat Identification System (ICIDS) 82

Infectious Disease Research 256

Institute for Creative Technologies (ICT) 264

Integrated Meteorological System (IMETS) 84

Integrated Situation Awareness and Targeting (ISAT) ATD) 263

Integrated System Control (ISYSCON) V(1)/V(2) 86

Interim Armored Vehicle (IAV) 88

Introduction: An Army in Transformation 1

ISYSCON (V)4/Tactical Internet Management System (TIMS) 90

J

Javelin 92

Joint Biological Point Detection System (JBPDS) 94

Joint Chemical Agent Detector (JCAD) 96

Joint Intelligence, Surveillance and Reconnaissance (JISR) ACTD 252

Joint Land Attack Cruise Missile Defense (LACMD) Elevated Netted Sensors Systems (JLENS) 98

Joint Network Management System (JNMS) 100

Joint Service Lightweight Integrated Suit Technology (JSLIST) 102

Joint Service Lightweight Nuclear Biological Chemical Reconnaissance System (JSLNBCRS) 104

Joint Service Lightweight Stand-off Chemical Agent Detector (JSLSCAD) 106

Joint Tactical Ground Stations (JTAGS) 108

Joint Tactical Information Distribution System (JTIDS)/Multifunctional Information Distribution System (MIDS) 110

Joint Tactical Radio System (JTRS) 112

Joint Tactical Terminal (JTT) 114

Joint Warning and Reporting Network (JWARN) 116

JRAC Joint Rapid Airfield Construction (JRAC) 261

K

Kiowa Warrior (Legacy Force) 234

L

Land Warrior (LW) 118

Lethality 259

Lightweight Airborne Multispectral Minefield Detection (LAMD) 263

Lightweight Forward Entry Device (LFED)/Forward Entry Device (FED)/Pocket-Sized Forward Entry Device (PFED) 120

Lightweight Laser Designator Rangefinder (LLDR) 122

Line-of-Sight Anti-Tank (LOSAT) 124

Logistics Command and Control (LOG C2) ATD 250

Logistics Reduction 260

Loiter Attack Munition—Aviation 258

Long Range Advanced Scout Surveillance System (LRAS3) 128

Longbow HELLFIRE 126

Low Cost Precision Kill/Advanced Precision Kill (LCPK) ATD 259

M

M113 Family of Vehicles (FOV) 216

Maintenance 222

Maneuver Control System (MCS) 130

Medical Chemical and Biological Defense Research 257

Medium Caliber Armaments 132

Medium Extended Air Defense System (MEADS) 134

Methods and Measures of Commander-Centric Training STO 264

Military Operational Medicine Research Program 254

Military Satellite Communications (MIL-SATCOM)–EHF 136

Military Satellite Communications (MIL-SATCOM)–SHF 138

MILSATCOM — Ultra High Frequency (UHF) and Global Broadcast System (GBS) 140

Mobile Gun System (MGS) Main Gun Ammunition 142

Modernization 6

Mortar (120mm) 144

Multi-Functional On-The-Move Secure Adaptive Integrated Communications (MOSAIC) ATD 251

Multi-Role Armament and Ammunition System (MRAAS) ATD 246

Multiple Launch Rocket System (MLRS) 218

N

Near Term Digital Radio System (NTDRS) 146

Networked Sensors for the Objective Force ATD 249

Next-Generation Anthrax Vaccine 257

Night Vision (NV) Image Intensification (I2) System 148

Nuclear, Biological and Chemical Reconnaissance System (NBCRS)–Fox 236

O

Objective Crew Served Weapon (OCSW) ATD 259

Objective Force Warrior 258

Objective Individual Combat Weapon (OICW) 150

P

Paladin 238

Palletized Load System (PLS) 240

PATRIOT 220

Personnel Technologies 264

Points-of-Contact 293

Profiler 152

Prophet 154

Q

Recapitalization 192

Rotorcraft 257

S

Science and Technology 244

Second Generation Forward Looking Infrared (FLIR) 156

Selection, Classification and Performance Metrics for the Objective Force STO 264

Semi-Autonomous Robotics for FCS 248

Sensor Performance Technologies 249

Sentinel 158

Single Channel Ground and Airborne Radio System (SINCGARS) 160

Small Arms 242

Smoke Generator (M56 Coyote) 162

Solid State Heat Capacity Laser (SSHCL) Science and Technology Objective 260

Stinger 164

Striker 166

Sustainable Military Use and Stewardship of Army Lands 262

Synthetic Aperture Radar/Moving Target Indicator (SAR/MTI) 168

Systems Hazard Research 255

T

Tactical Command and Control (C2) Protect ATD 251

Tactical Endurance Synthetic Aperture Radar (TESAR) 170

Tactical Exploitation System (TES) 172

Tactical Operations Center (TOCs) 174

Tactical Unmanned Aerial Vehicle (TUAV) 176

Tank Main Gun Ammunition 178

Theater High Altitude Area Defense (THAAD) System 180

Thermal Weapon Sight (TWS) 182

TOW Improved Target Acquisition System (ITAS) 184

U

Unexploded Ordnance (UXO) Identification and Discrimination 262

W

Warfighter Information Network–Tactical (WIN-T) New Start 186

Weapon Systems Contractors by State 283

Weapon Systems Contractors by System 277

Weapon Systems Top Fifty Contractors 275

Wolverine 188

X

XM777 Joint Lightweight 155mm Howitzer (LW155) 190

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