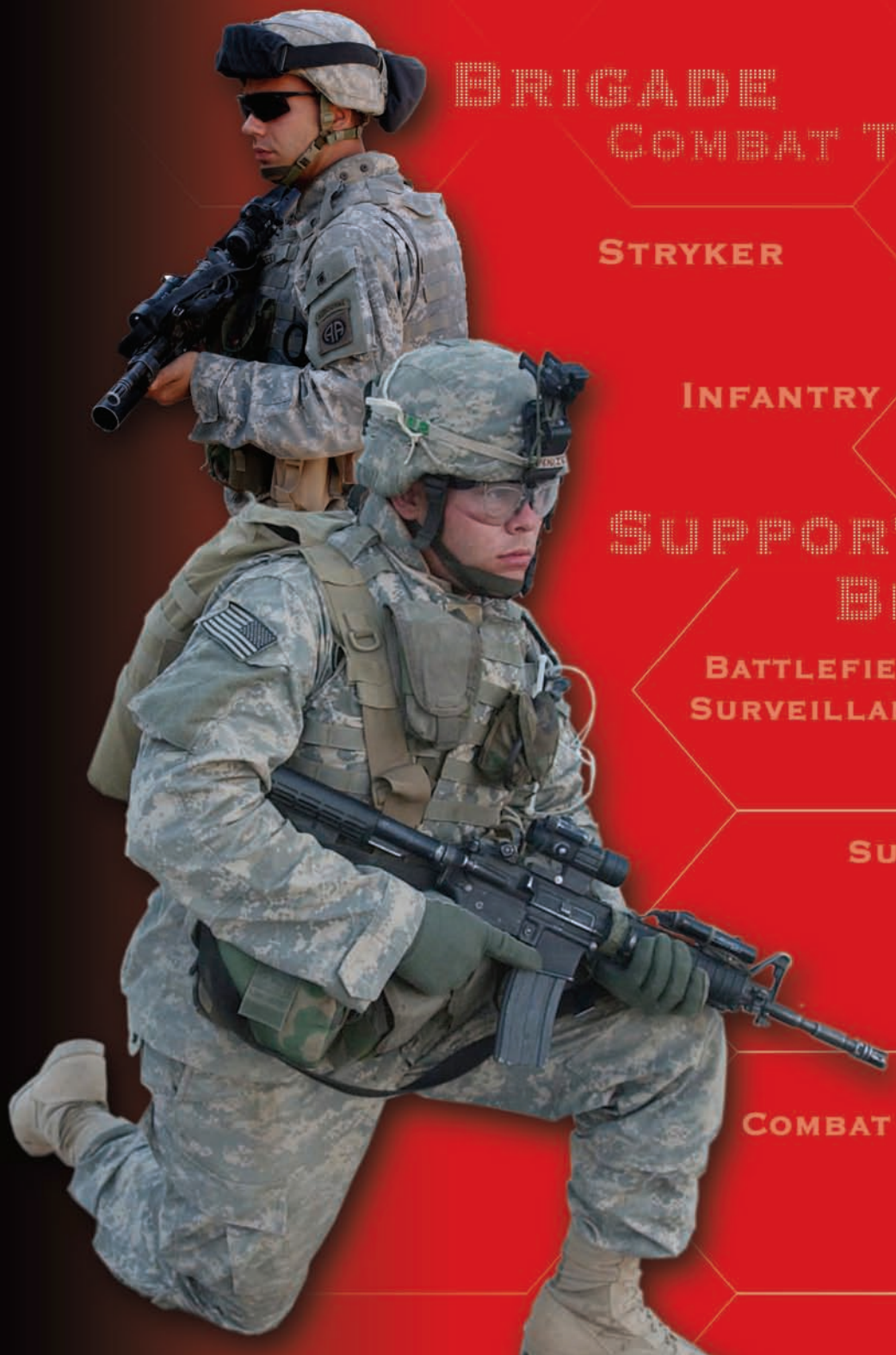
2006 ARMY MODERNIZATION PLAN



Brigade Combat Teams

- Stryker
- Heavy
- Infantry

Support Brigades

- Battlefield Surveillance
- Sustainment
- Combat Aviation
- Combat support
- Fires

Building, Equipping and Supporting the Modular Force

REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
DEPUTY CHIEF OF STAFF, G-8
700 ARMY PENTAGON
WASHINGTON, DC 20310.0700

March 2006

SUBJECT: 2006 Army Modernization Plan

In the past year the Army has been actively engaged in prosecuting the war on terrorism, sustaining our global commitments, and responding to disaster relief recovery missions. Our Army has been simultaneously at war, while continuing to modernize and transform itself through the accelerated implementation of a fully integrated effort—The Army Plan. Throughout this process the Army remains committed to provide the best possible sustained land power for our Joint Force. This commitment has been evident in the superb performance of our Soldiers in Operation Iraqi Freedom and Operation Enduring Freedom and in their magnificent efforts abroad and at home.

The annual *Army Modernization Plan* provides a report on the Army's efforts to support our Soldiers and maintain current readiness, while developing and fielding improved capabilities for tomorrow. The *2006 Modernization Plan* updates this course to include the urgent demands of today's missions and opportunities for applying significant technological improvements. It describes the flexible modernization and investment strategies that place a priority on providing the best capabilities to the Army today, while also supporting a sustained transformation process.

Congress and the Department of Defense have generously provided the resources for today's Army and for tomorrow's improved force. The President's Budget for Fiscal Year 2007 demonstrates continued support for this essential path of sustaining our Soldiers at war and investing in the Army's future readiness. These efforts will be essential for our continued success.

DAVID F. MELCHER
Lieutenant General, U.S. Army
Deputy Chief of Staff, G-8

2006 ARMY MODERNIZATION PLAN

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2006 ARMY MODERNIZATION PLAN

Purpose

The *2006 Army Modernization Plan* (AMP) describes how Army efforts are supporting transformation by improving current capabilities and developing new ones using a comprehensive and balanced approach. This document complements The Army Plan by describing the modernization and investment strategies adopted to enhance the current Army modular force, reset the rotational force and sustain the required levels of readiness while pursuing critical capabilities for the future force. Along with the *Army Science and Technology Master Plan*, it provides the rationale and justification for the research, development, and acquisition (RDA) portion of the Army's program in support of the Fiscal Year (FY) 2007 President's Budget. The AMP conforms to Army leadership guidance, found separately in the *2006 Army Posture Statement,* the *Army Strategic Planning Guidance,* and the Army Campaign Plan. Specifically, the *2006 Army Modernization Plan* updates Congress on the Army modernization program by:

- Describing the current and future strategic environment in which we are transforming and modernizing;
- Describing the Army's transformation efforts and the progress to date;
- Describing the key accomplishments and remaining challenges to the Army's modernization and investment strategies;
- Communicating FY07 budget priorities required to prevail in the ongoing war on terrorism, sustain our global commitments, preserve the needed investment to transform, and field an improved future force; and
- Providing information on selected programs that are critical to the Army's efforts to enhance capabilities of the current force. Modernization must be fully coordinated, balanced and synchronized across the critical requirements within the doctrine, organizations, training, materiel, leadership and education, personnel, and facilities construct. Annexes A through F separately discuss each of these essential areas.

The AMP comes with a glossary of frequently used acronyms. The AMP is also found on the web at http://www.army.mil/features/MODPlan/2006.

2006 ARMY MODERNIZATION PLAN

Executive Summary

Committed Abroad and at Home while Transforming for the Future

The Army is actively engaged at the forefront of the continuing global war on terrorism and committed, along with our sister Services in the Joint Force, to the primary mission of protecting U.S. security interests at home and abroad. In addition, the challenges we face while supporting the emerging democracies in Iraq and Afghanistan continue to play a decisive role in Army operations. Army forces, both the active and reserve components, spearheaded the tremendous response and recovery to recent natural disasters, including Hurricanes Rita and Katrina. From aiding civil authorities and citizens at home to combating insurgents and training indigenous friendly forces, the Army is directly serving the nation's needs across a broad and demanding spectrum.

During the sustained and widespread commitment of the past year, the Army has also successfully progressed in its greatest transformation and restructuring since World War II. The concept of the Army's modular conversion was first announced in early 2004, and since then major structural change has taken place and continues, with the end result being a force that is more powerful, flexible and deployable to meet operational requirements. This fundamental restructuring affects the entire force and represents enduring change that will make the Army more ready than ever to sustain today's commitments and be postured for tomorrow's uncertainties. The Army's modular force is already in the field performing critical missions, and it will be the foundation for a future force that continually evolves in the coming years to apply technological advances and incorporate lessons learned.

The Army Plan continues to integrate the Future Force Capstone Concepts, the Army Modular Force, Army Force Generation (ARFORGEN), Future Combat Systems (FCS) and Network Enabled Battle Command initiatives to ensure our Army remains the preeminent land power and our Soldiers have the capabilities they need to win in any scenario. Rather than a destination achieved by a materiel solution, The Army Plan provides a path of continuously improving capabilities designed to field a force of adaptive and innovative Soldiers, led by experienced leaders, organized into deployable elements and enabled by leading-edge technologies to assure its dominance in any environment.

The Army deployed today, both overseas and at home, is the basis for meeting our commitments and maintaining essential readiness to respond to all missions assigned. The Soldier, imbued with a Warrior Ethos, remains the foundation of our force and the indispensable centerpiece of the Army's contribution to the overall Joint Force. Our Soldiers place the mission first, exhibit the determination to never accept defeat, quit or leave a fallen comrade, and to view the profession as a dedication to guarding our freedoms and American way of life. The recruiting, training, equipping, leading, and supporting of these Soldiers are the enduring tasks of our Army

and the solemn commitment of the nation as a whole.

To protect Soldiers and improve their capabilities, the Army continues to balance its efforts to provide the best training and equipment possible while continuing to develop future capabilities. Past modernization and transformation efforts resulted in significant improvements in individual Soldier protection and enhanced individual and unit capabilities. Today, the Army is building on these and the modular force initiatives to ensure that the nation has the force it needs today and the force required to meet tomorrow's challenges. The Army's component of the FY07 President's Budget (PB07) reflects these efforts as well as the results of the Army's participation in the Joint Capabilities Integration and Development System (JCIDS) to produce a campaign-quality Army with the joint and expeditionary capabilities needed for the Joint Force and the nation's overall security.

Accomplishments and Priorities

In PB07, we prioritize our efforts based on the Army mission to provide necessary forces and capabilities to the Combatant Commanders in support of the National Security and Defense Strategies. To achieve this goal, the Army is accelerating its ongoing transformation, which will result in a total redesign and significant improvement of the operational Army. Support and resources provided by Congress and the Department of Defense (DOD) have already created substantial progress and momentum in this process, and continued support is essential to ensure success in meeting current and future demands. Since the *2005 Army Modernization Plan*, the Army has:

- Built on the previous budget submission and Future Years Defense Plan (FYDP) and continued to place the highest priority on sustaining our global commitments and especially on supporting those forces deployed on the front lines in Afghanistan and Iraq. Additionally, the Army has refined and adapted its plans, processes, and initiatives to incorporate lessons learned from those operations and improve overall readiness. The second priority remained the focus on transforming the Army and modernizing its capabilities for the future by implementing. The Army Plan links modular force conversion and the development of the FCS, which is the Army's most important investment and modernization program.
- Equipped deployed Soldiers with the best materiel solutions and available training to provide both protection and the capabilities to ensure mission success. Priority has been given to providing the latest in force protection equipment available, including individual Soldier interceptor body armor. This force protection improvement, along with greater situational awareness and improved training techniques has reduced the ratio of casualties to attacks from improvised explosive devices (IED). The Rapid Fielding Initiative (RFI) is a key instrument for accelerating the fielding of the latest off-the-shelf technology to Soldiers. By the end of FY07, the entire operational Army will have been equipped using this program. In addition to RFI, the Army has continued to use the Rapid Equipping Force (REF) process as a means of accelerating items that are critical to meeting more immediate operational requirements.
- Bolstered force protection to Soldiers by enhancing the protection levels of tactical wheeled vehicles they operate. The Army has:

- Accelerated production and fielding of up-armored HMMWVs
- Provided add-on armor to over 26,000 other tactical wheeled vehicles in the operational theater
- Added enhanced armor for the Bradley Fighting Vehicle, the M113 Armored Personnel Carrier, and the Stryker armored vehicles in Iraq
- Restored funding and increased production of the Armored Security Vehicle as an improved means of conducting local patrolling and protecting road convoys
- Accelerated the fielding of a Cupola Protective Ensemble to protect exposed gunners

- Installed aircraft survivability equipment (ASE) and additional ballistic protection on all deployed aircraft.
- Improved situational awareness and prevention capabilities by fielding large quantities of unmanned aerial systems (UAS), both tactical and small-sized, to the theater of operations. Each of these efforts are augmented and coordinated with the Joint IED Defeat Organization to counter evolving enemy threats.
- Continued the reset process to restore units returning from operations to a desired level of combat effectiveness and readiness for future missions. Reset incorporates efforts to reconstitute, recapitalize, replace losses, and reorganize units through Congressional supplemental appropriations that bridge past and future annual budgets. The operational demands on equipment has been at a rate up to eight times that of normal peacetime tempo, and the reset requirements will extend for at least two years after the end of hostilities in order to be prepared for future contingencies.
- Implemented a significant portion of the modular restructuring initiative to produce increased combat power that is more flexible and responsive to the regional Combatant Commanders. In 2005 and 2006 the overall pace of modular conversion increased to involve 24 maneuver brigades, six division and corps headquarters, and 39 Support Brigades across both active component (AC) and reserve component (RC). Eventually this conversion process will create a rotational pool of 70 Brigade Combat Teams (BCTs) and over 200 Support Brigades across the AC and RC. This restructured force will also serve to posture the Army for future transformation efforts.
- Initiated a temporary 30,000 increase in Army end strength to support the modular conversion initiative. End strength will return to 482,400 by 2011 once planned efficiencies in operational and institutional Army units are completed. By 2008, the Army is executing a plan to increase its active duty operational force by 40,000 to a total of 355,000 Soldiers to support the modular force.
- Completed in 2005, the successful validation, fielding, and operational availability of the 172nd Infantry Brigade in Alaska as the third Stryker Brigade Combat Team (SBCT). The unit was deployed to Iraq in fall 2005. The Army also increased the fielding plans for the SBCTs to a total of seven BCTs by 2008, to include one scheduled for deployment to Europe in summer of 2006.
- Continued with the rebalancing/restructuring of over 100,000 positions throughout all components and establishing RC tran-

sient, trainee, holdee and student (TTHS) accounts. This restructure will enhance capabilities of Army modular formations and increase the number of units able to conduct long-duration stability operations. This will reduce stress on high-demand/ low-density units such as civil affairs and psychological operations. By adding the personnel reductions in Soldier requirements that are created by military-to-civilian conversion, Base Realignment and Closure (BRAC), and rebalancing, the Army creates approximately 15,000 Soldier positions within the operational force without increasing end strength.

- Implemented the ARFORGEN model for achieving a more predictable and structured progression of readiness for AC and RC units. ARFORGEN ensures fully trained and equipped forces are prepared for every operational deployments. All units follow a deployment cycle of one year deployed out of every three years for AC, and one in six years for RC. Concurrent with the transition, the RC mission shifts from that of strategic reserve to one of an available operational force. To best support these mission, the Army has developed a new equipping strategy that devotes resources and equipment to meet future mission requirements in accordance with ARFORGEN established priorities and without regard to component of the force being equipped.

- Refined and reaffirmed The Army Plan that links the modular force initiative and the FCS program that is developing leap-ahead capabilities and net-centric operations. These initiatives are occurring while the Army remains fully engaged in the global war on terrorism. FCS is the Army's major and most critically important modernization program and the underpinning of our overall plan for transforming and modernizing our ground forces over the next 30 years. Several improvements occurred:

  - In April 2005, the Secretary of the Army directed the restructuring of the contractual framework for FCS into a more conventional Federal Acquisition Regulation-based arrangement to help promote best business practices and improve program oversight.

  - In June, FCS completed an important Defense Acquisition Board in-progress review, which validated the progress and direction of the program to date.

  - In August, FCS underwent a functional review of its system of systems.

  - In September, the Army highlighted the accomplishments to date by publicly demonstrating some of the actual FCS technology at Aberdeen Proving Grounds and at Fort Dix.

  - In November, the Defense Acquisition Executive approved the new program baseline.

- Progressed with the aviation restructuring approach announced after termination of the Comanche in 2004. Specifically, the Army awarded a contract in August 2005 for the building and delivery of 368 Armed Reconnaissance Helicopters from 2006 to 2013 to provide a reconnaissance and light attack capability. This procurement will complement other helicopter acquisition and recapitalization initiatives to upgrade the overall quality and quantity of the Army aviation fleet.

- Coordinated the Army modular conversion, the Integrated Global Presence and Basing Strategy (IGPBS), and the BRAC processes into a plan to station and flag

active component divisions and BCTs to match changes in the security environment. This plan will involve the permanent restationing of over 150,000 Soldiers and 200,000 family members by FY11.

- Implemented initiatives that will increase the numbers of Army Special Operations Forces (ARSOF) to configure these units to sustain a long-term campaign against global terrorism. ARSOF is becoming more self-sufficient and developing forces that better integrate with modular conventional forces.
- Initiated a reengineering of Army business practices to improve efficiencies to reform processes, divest outmoded practices, and increase responsiveness in providing trained and equipped forces to the Combatant Commanders. The Army is using Lean Six Sigma methods in this overall process to free resources to better support the warfighting side of the Army.
- Implemented personnel programs that improved the quality of life and the Army's support for deploying Soldiers and their families. These included:
    - Army One Source, a program for providing a ready source of information and support to active and mobilized reserve Soldiers and their families.
    - The Army Deployment Cycle Support program to assist them in meeting the challenges of reintegration.
    - The Residential Communities Initiative and Barracks Modernization Program to improve both family housing and Soldier barracks. Almost 50,000 housing units have been privatized and 32,000 additional units are planned. Two-thirds of the scheduled barracks modernization has been accomplished with almost $2 billion being invested in the current program for this important initiative.

Highlights of the FY07 President's Budget

The *2006 Army Modernization Plan* is submitted in conjunction with the release to Congress of PB07, which supports an Army engaged at war; and committed to disaster relief, reconstruction, homeland security, and continued support for transformation of the Army into a more capable and modular force. Specifically, the Army's portion of the PB07 submission provides funding for:

- Maintaining emphasis on improving the readiness of the current force by devoting $13.8 billion in FY07-11 to the recapitalization of systems in this force. This includes both rebuild recapitalization—returning the system to the original design capabilities—and upgrade recapitalization—rebuilding the system and enhancing its capability. Additionally, by supporting efforts in the reset program, it serves to restore readiness for future missions for units involved in recent operations. The reset program is financed primarily through supplemental funding, which is directly tied to operational deployments of forces in Iraq and Afghanistan.
- Allocating over $29 billion from the Army Modular Force reserve toward the total modular conversion of 70 BCTs and their associated Support Brigades.
- Implementing a revised equipping strategy that recognizes the operational role of RC forces and increases funding significantly to $20.8 billion over the FYDP to equip Army National Guard (ARNG) and $3.8 billion to equip the U.S. Army Reserve (USAR).

- Providing $2.7 billion to complete the fielding of seven SBCTs by 2008.
- Spinning out modern technologies to the current force as rapidly as advancements are developed from the FCS program. The previous restructuring in 2004 of the FCS program provided savings of $9 billion for this purpose.
- Leveraging joint, Army component, academic, and industry efforts to take advantage of technology to support the operational Army and the warfighter. Focus science and technology (S&T) investment of approximately $9.1 billion in the development of capabilities needed in the future force through the appropriate spin out of technologies and systems into the current force.

2006 ARMY MODERNIZATION PLAN

Strategic Framework

Strategic Environment and Global Posture

The United States is a nation at war and involved in a struggle to defeat enemies who threaten our survival and way of life. The strategic environment has changed significantly since the end of the Cold War, and events since 11 September 2001 dramatically demonstrated that we have entered a new era of conflict with different challenges to overcome. Most apparently today, the environment is characterized by a serious threat from dangerous anti-United States and anti-Western transnational Islamic terrorist groups seeking to target U.S. and allied interests worldwide. Although traditional challenges will remain, new and unforeseen ones have emerged that require increased capabilities and require the Army to adapt force structure and methods to deal with them. The current strategic environment now includes the growth of failed and failing states, non-state actors, the danger of states with newly acquired weapons of mass destruction (WMD), and potentially hostile states employing asymmetric means. All of these factors represent not only the imperative for the military and Army to change, but also influence the method by which changes take place.

Within this new strategic environment, Operations Enduring Freedom, Noble Eagle and Iraqi Freedom have been major undertakings by the United States and have involved a significant commitment of Army forces as part of multiple joint operations (Figure 1). Today's Army is truly a global force.

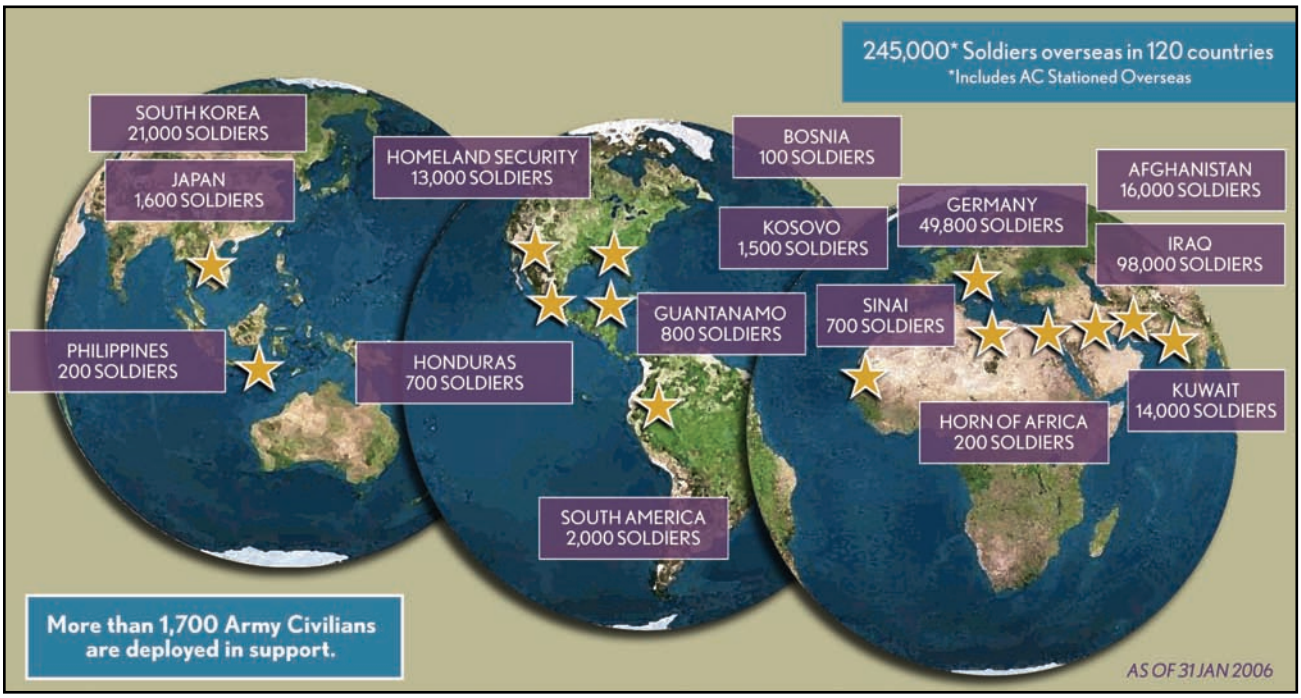


Figure 1. Army Global Commitments

Stability operations assume a significant role in the use of Army forces as well. These operations have provided valuable insights concerning the changing operational environment, the adaptability of our enemies, and the complexity of challenges within the new strategic environment. The lessons learned from ongoing operations confirm the critical importance and required level of involvement of all Army components and our supporting civilian elements.

The emergence of irregular challenges and the requirements of post-conflict operations have stretched the U.S. military. Current trends toward regional and global integration may render interstate war less likely, but stability and legitimacy of conventional political orders are vital to U.S. interests. New actors, methods and capabilities will challenge the United States, our interests, and our alliances during this long struggle.

Persistent and Emerging Challenges

The National Defense Strategy (NDS) has advanced a typology of four new types of emerging security challenges—irregular, traditional, catastrophic, and disruptive—to which the nation will have to respond.

The four persistent and emerging challenges and their definitions are depicted in Figure 2 and capture many of the issues in the new strategic environment. Their boundaries are neither precise nor discrete and in some situations will overlap, may occur simultaneously, or offer no easily discernible transition from one challenge to another.

To achieve success against these challenges, we must be capable of operating across the spectrum of conflict in a wide variety of conditions. We must rapidly transition between missions with appropriate force mix and capabilities. We must integrate activities in joint, interagency and multinational environments in order to address more diffused and networked adversaries by integrating all elements of national power—diplomatic, informational, military, and economic—in a more interconnected security environment within a global strategy. We must also invest in preparedness for scientific and technological breakthroughs that may fundamentally alter conditions in the battlespace. Doing so will mitigate the risk of our adversaries exploiting breakthrough technologies to the detriment

Figure 2. The Security Environment

of our operational and logistical systems and processes.

Transformation as a Strategic Imperative

To ensure U.S. forces continue to operate from a position of overwhelming military advantage when dealing with these challenges we must embrace the present new realities. First, the United States will be increasingly challenged by a diverse and dangerous set of potential adversaries ranging from rising regional powers to terrorist movements and irresponsible regimes unbounded by accepted restraints governing international behavior. Second, it is unclear how long the United States will be involved in stabilizing Iraq. Third, the world looks to the United States for leadership in a crisis—to the point of risking inaction without our participation. Finally, in many instances, only the United States has the requisite capabilities to effect enduring resolutions and acceptable outcomes for complex crises. The future Joint Force must retain a quality of adaptive dominance—the ability to dominate any situation regardless of how an adversary reacts. This adaptive quality requires a future force with embedded versatility and adaptive Soldiers and leaders who can master the critical variables organic to the future "complex" environment. The primary challenges of this complex environment are summarized in Figure 3.

The 2006 Quadrennial Defense Review

To address these challenges, in September 2002 a new National Security Strategy (NSS)

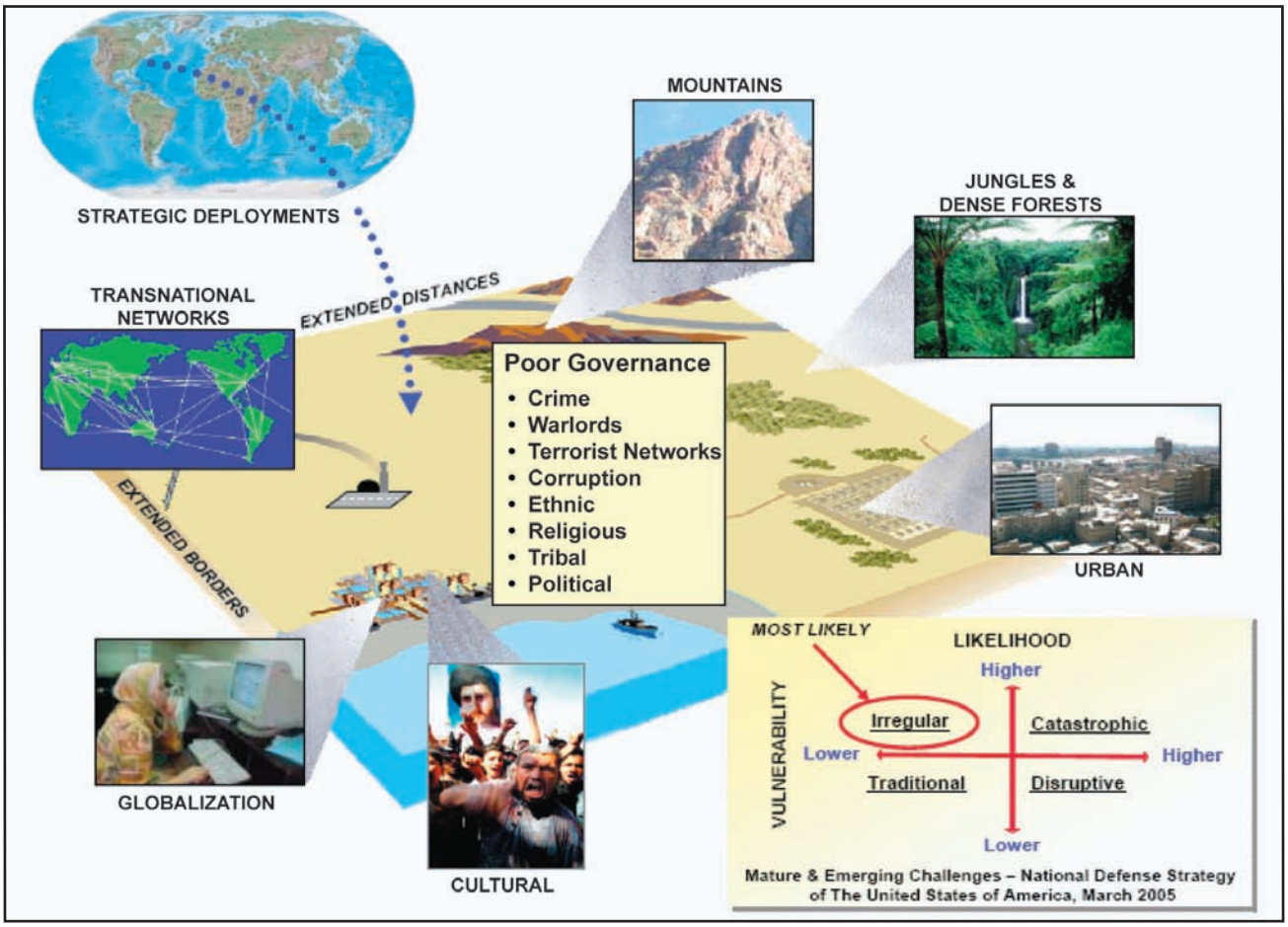


Figure 3. Complex Operating Environments

was published to provide a foundation for current operations as well as vision to meet future challenges. In March 2005, DOD published the National Defense Strategy (NDS) that attempts to reach the goals set forth in the President's strategy by extending U.S. influence, prosperity and goodwill while preserving the nation's security. In May 2004, the Chairman of the Joint Chief of Staff signed the National Military Strategy (NMS) to describe how the Defense Department was going to achieve the "ends" listed in the NSS and NDS. Finally, In February 2006, the congressionally mandated Quadrennial Defense Review (QDR), tasked DOD to define a defense strategy during the conduct of the global war on terrorism and continuing operations in Afghanistan and Iraq. The 2006 QDR includes force structure and programs required to implement that strategy at low-to-moderate risk over the ensuing 20 years. The QDR's principal purpose was to develop guidance for operationalizing the National Defense and National Military Strategies and shaping the future force informed by the assessment of four focus areas:

- Building partnerships to defeat extremism
- Defending the homeland in-depth
- Shaping the choices of countries at strategic crossroads
- Preventing the acquisition or use of weapons of mass destruction by hostile state or non-state actors

The Army must change its center of gravity in terms of strategic context, going from an organization focused on the major combat operations (MCOs) to increased focus on the challenges of irregular warfare (stability operations, global war on terrorism, and homeland security/homeland defense). This movement from the MCO as the center creates risk that must be mitigated through the Army's interdependence on the Joint Services.

The 2006 QDR also recognized the importance of the Army's efforts to transform for future challenges by increasing both capability and capacity by continuing to:

- Develop modular, multipurpose, brigade-based combat and support forces (elements of joint expeditionary force packages with campaign qualities)
- Develop full-spectrum FCS capabilities
- Explore opportunities to field spirals of advanced FCS capabilities into the current force that are the most applicable for irregular warfare and global war on terrorism environments.

The 2005/2006 Army Strategic Planning Guidance: "Ends, Ways and Means"

The *Army Strategic Planning Guidance* (ASPG), Section I of The Army Plan, is the Army's institutional strategy and serves as its principal long-range planning document. The ASPG expresses the senior leadership's intent for how the Army will fulfill its Title 10 obligations to the Joint Force and the nation in support of and nested under the NDS and NMS.

The ASPG, coupled with the *2006 Army Posture Statement,* helps guide the Army strategy in providing necessary capabilities to the Combatant Commander in terms of "ends, ways and means" (Figure 4). The four interrelated strategies are the "ends" and they explain what the Department of the Army (DA) does to support the NMS. Achieving these strategies is the goal of The Army Plan and ensures we attain the Army Vision. The 17 strategic initiatives are the "ways" the Army encompasses our Title 10 functions. They

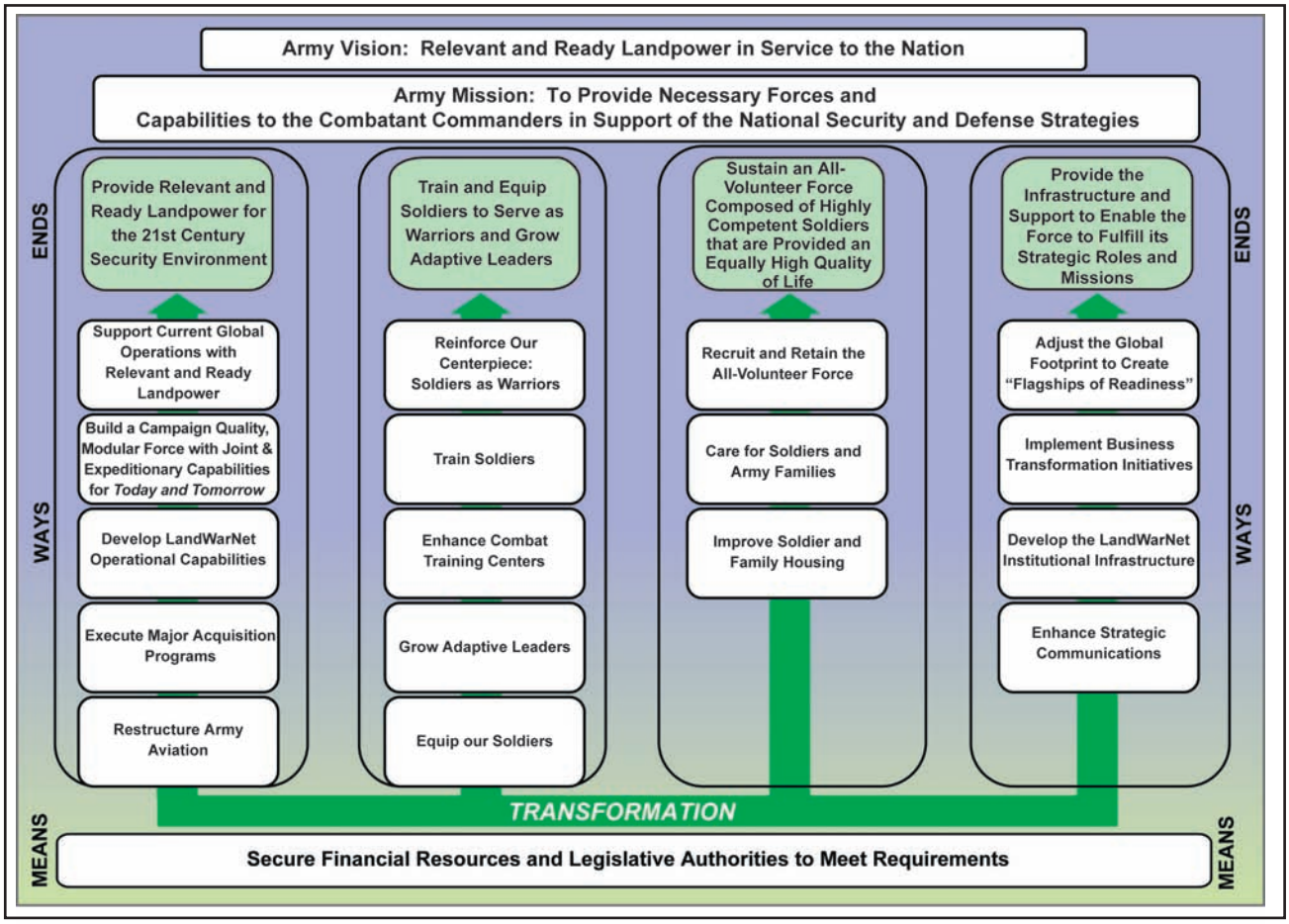


Figure 4. Army Strategy Map

elaborate on how the Army should focus itself to be relevant and ready to meet the challenges of the current and future security environments. The "means" of the Army's strategy are the resources and authorities the Army uses to perform these functions.

Due to evolution in land warfare and its dynamic and complex nature, the Army will advance and change its scope to maintain effectiveness and relevancy in support of defense and military strategies. The 2006 ASPG will be the result of an intense analysis and review by the Army Staff to provide strategic guidance for the challenges of the 21st century and incorporate guidance from the 2005 NDS, 2006 QDR, the *2006 Army Posture Statement* and 2008-2013 Strategic Planning Guidance (SPG) . This consolidated strategy approach will ensure the necessary success in accomplishing all of the Army's enduring and emerging military responsibilities.

Strategic Performance Management

In an effort to transform the Army into a strategy-focused organization and assess its performance against the objectives and priorities outlined above, the Army is evolving the Strategic Readiness System (SRS) into the Strategic Management System (SMS). The new system is adopting the ends, ways, and means construct listed above to establish clear linkages between the objectives/initiatives derived from our strategic documents and the Army's strategic actions. The ends describe what the Army must accomplish to

support the NSS, NDS, and NMS. The ways, or processes, define the initiatives, tasks and metrics to assess performance toward accomplishing those objectives while also providing leading indicators for future performance. The means are the resources the Army requires to achieve the ends.

In this manner, the SMS helps the Army balance today's requirement of providing trained and ready forces and capabilities to the Combatant Commanders with the requirement to do so in the future. Sustaining our global commitments is and will remain our highest priority. The SMS provides senior leaders a process to simultaneously monitor sustainment of global commitments and transformation. Transformation objectives are viewed through the lens of the JCIDS process to ensure the Army generates the capabilities required for the Joint Force.

Joint Concepts, Capabilities, and Interdependencies

The context for developing future military concepts and capabilities is the linkage between how the Joint Force operates today and the vision for the future. The joint concepts and associated capability requirements under development by the Joint Staff, combatant commands and Services influence Army transformation efforts. These concepts are intended to serve as the engine of change to guide the transformation of the Joint Force to operate successfully in the next 10 to 20 years.

Joint concept development includes the following concepts:

- **The Joint Operating Concepts (JOC)** describe how a future Joint Force commander will plan, prepare and conduct specific operations and identify the capabilities required for each. The JOCs are homeland security, strategic deterrence, major combat operations and stability operations.

- **Joint Functional Concepts (JFC)** articulate how the future Joint Force commander will integrate a set of related military tasks to attain capabilities required across the range of military operations. They are broad, but derive specific context from the Joint Operating Concepts. JFCs allow for experimentation and measures of effectiveness.

- **Joint Integrating Concepts (JIC)** are intended to be building blocks for JOCs or JFCs, and will describe how a commander integrates functional means to achieve operational ends. They are anticipated to focus on a narrow portion of a JOC or JFC and further describe capabilities in terms of essential tasks, attributes, and measures of effectiveness and performance that form the means to identify capability gaps and redundancies.

The Army and our sister Services have made significant improvements in the planning and conduct of joint operations, progressing from joint interoperability (the assurance that Service capabilities can work together smoothly) to joint integration (collective efficiency and tempo). Because Army forces conduct operations as an integrated component of a Joint Force and will depend on the capabilities embodied within the Joint Force for its overall effectiveness, the future force will be an interdependent land component of the Joint Force. Although each Service contributes its own unique capabilities to the joint campaign, each dominating its own environment, their operational and even tactical interdependence is critical to overall Joint Force effectiveness. Joint interdepen-

dence is the purposeful reliance on other Service and joint capabilities to maximize their complementary and reinforcing effects, while minimizing Service vulnerabilities in order to achieve the mission requirements of the Joint Force commander. Joint interdependency forms this shared foundation. Beyond that, joint interdependent projection, protection, support and sustainment will optimize the Services' capabilities to best allow the Joint Force commander to effectively take the fight to a land-based enemy. It also provides the best means of maintaining the right force structure mix capable of meeting the breadth, depth and longevity of the current fight, while still maintaining the necessary focus on threats in the future operational environment. Below are five key joint interdependencies:

- **Joint Battle Command**. Integrated joint battle command/command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) capabilities to gain information superiority, share a common operating picture, enhance joint/integrated information operations, and improve the ability of Joint Force and component commanders to plan, execute and assess operations.

- **Joint Air and Missile Defense**. A comprehensive joint protection umbrella, extended to regional allies, that includes air and missile defense, provides security of ports of debarkation, and enables uninterrupted force flow against diverse anti-access threats.

- **Joint Fires and Effects**. Integrated joint fire control networks that provide more effective application of all source fires and effects, from theater to tactical levels.

- **Joint Force Projection**. Advanced strategic and operational lift capabilities and improved automated planning processes to facilitate strategic responsiveness and operational agility within the battlespace.

- **Joint Sustainment**. A joint-capable logistics community that maintains domain-wide visibility over requirements, resources, and priorities; that delivers capability with speed and precision to meet operational needs of the Joint Force commander; and that acts with unity of effort in the planning and execution of logistics across the joint operations area.

2006 ARMY MODERNIZATION PLAN

Army Transformation

The Army Plan

Transformation is a process that shapes the changing nature of military competition and cooperation through new combinations of concepts, capabilities, people and organizations. These combinations employ the nation's advantages and protect against asymmetric vulnerabilities to sustain the U.S. strategic position, which underpins peace and stability in the world. The Army is pursuing the most comprehensive transformation of its forces since World War II. These transformation efforts are both evolutionary and revolutionary in nature, and they are intended to improve Army and Joint Force capabilities to meet the demanding requirements of a nation at war as well as future full-spectrum requirements.

To ensure we can meet the current and future challenges, the Army has refined its overall transformation strategy and is now executing The Army Plan, which consists of four overarching, interrelated strategies to manage change across the entire DOTMLPF spectrum. The Army Plan is a natural progression from current to future capabilities that improves and modernizes capabilities and transforms organizations in order to provide ready and relevant land power; develops, trains, and equips Soldiers and grows adaptive leaders; sustains the volunteer force by matching the quality of life with the quality of service; and provides the infrastructure and support necessary to ensure successful mission accomplishment. Rather than a destination achieved by a materiel solution, The Army Plan is an orientation or path of continuously improving capabilities, which is designed to field a force of adaptive and innovative Soldiers, led by experienced leaders, organized into deployable elements and enabled by leading-edge technologies to assure its dominance in any environment.

Our nation remains at war and will continue to be engaged in a long, evolving conflict against learning, adaptive adversaries. Approximately one-fourth of our Army is deployed to protect the nation, and we anticipate that we will sustain similar levels of commitment through the immediate future. Starting in 2004, the Army developed an integrated, executable plan to provide the means for the Army to transform over time while simultaneously meeting its strategic commitments. Army transformation is framed in terms of defense transformation. It occurs from the top down and from the broader needs of joint operations to the more specific needs of the Army. The Army informs its transformation strategy from several sources:

- Defense Strategy and Transformation Planning Guidance.
- A comprehensive joint view of the future operational environment.
- Joint concepts that identify required Joint Force capabilities and interdependencies.
- Operational experience that identifies known shortfalls requiring change and promising improvements to joint and Army operations.

- Exploration of scientific and technological advances and breakthroughs impacting across operations, intelligence, and logistics domains, and across the continuum from near to far term.

We have accelerated change throughout the Army to enable it to fight a long, continuously evolving conflict, and 2006 marks the high-water level of this activity. Concurrent with developing and executing Army-wide change processes, we are participating in other initiatives that will dramatically shape our future: the QDR, BRAC, and the IGPBS. Along with the opportunities to transform that are afforded by heightened levels of operational commitment and maturation of change processes, we also face important risks as an institution. The DOD and the Army are coming under increasing fiscal pressure as the government responds to rising costs of the ongoing war as well as the domestic demands for hurricane relief and associated reconstruction. Within this constrained environment, attention must be paid to preserve the momentum already achieved in our transformation efforts and build upon them in the future. Some of these recent accomplishments, as well as the upcoming highlights of transformational activities, are summarized in the following sections.

Army Transformation in 2005

In 2005, the Army accelerated its transformation activities through execution of the Army Campaign Plan (ACP), which sets into action the Army's transformation strategy by providing specific objectives, assigning responsibilities for execution, and synchronizing resources. These achievements included:

- Modular conversion of 13 and activation of three BCTs.
- Creation of organizational designs and modular conversion sequences of modular headquarters, Support Brigades, and theater commands that encompass over 70 percent of the Army's operating forces.
- Continued execution of AC and RC rebalancing decisions affecting over 100,000 personnel spaces and execution of those decisions for approximately 31,000 Soldiers.
- Design and implementation of ARFORGEN processes that maximize unit readiness and availability of forces while ensuring greater stability and deployment predictability for Soldiers and their families.
- Implementation and adaptation of Generation Force processes that parallel and complement the work we have achieved for the operational Army.
- Improved synchronization support for near-term warfighter requirements within Army resource processes, to include continued evolution of the RFI and REF.
- Program divestment, restructuring, and business process reengineering decisions equaling $11.7 billion.
- Publication of Training and Doctrine Command (TRADOC) *Pamphlet 525*-3-0, *The Army in Joint Operations: The Army's Future Force Capstone Concept 2015-2024*, the Army's overarching visualization of how the future force will support Joint Force commanders in the period 2015-2024.

Army Transformation in 2006

In 2006, the Army will execute the following transformation activities:

- Completion of Army modular force structure planning that will incorporate over 90 percent of Army operating forces to include BCTs, Support Brigades, theater commands, operational headquarters, and Special Operations Forces (SOF).

- Execution of our highest density of modular conversion activities within the Army transformation strategy—over one-third of all formations to be converted in a single fiscal year. This action will create modular formations at every echelon of Army structure—another first.

- Initial execution of ARFORGEN—a force management process placing Army operating forces on rotational deployment cycles.

- Publication and execution of Army restationing actions in support of BRAC and IGPBS.

- Initial execution of QDR recommendations.

- Continued execution of AC and RC rebalancing decisions affecting over 100,000 personnel spaces and execution of those decisions for approximately 55,000 Soldiers.

- Initial implementation of Lean Six Sigma processes throughout the Army staff.

- Identification and initial implementation of substantial structural changes to the institutional base of the Army.

- Initial integration of joint capabilities areas (JCAs) planning into Army doctrine development.

- Publication of an Army Generating Force capstone document that complements TRADOC Pamphlet 525-3-0.

The global war on terrorism provides a fleeting window for the Army to transform organizationally, materially, and culturally. As units return from overseas deployments, they must take time to rest and regenerate their combat capabilities—a period we call reset. With the support of Congress, the Army is using this reset period to reorganize to more effective, modular formations. This enables the Army to transform organizations for future operations instead of merely resetting them. This process ensures that the Army meets its two most pressing missions: winning the war and transforming for the future.

Restoring Readiness

Under the overarching reset program, the Army provides resources to win the fight, transform, modernize and recapitalize. Specifically, reset executes Army activities that return all deployed equipment to fully operational standards, upgrade capabilities implementing Operation Iraqi Freedom and Operation Enduring Freedom lessons learned, reorganize to modular designs in accordance with the ACP and ARFORGEN, replace obsolete equipment in prepositioned stocks, and reconfigure Army prepositioned stocks to be more strategically relevant and responsive. Congressional support in the form of supplemental appropriations ensures that returning Army formations are transformed in an effective and structured manner to support future operations.

As units begin to redeploy from operational theaters, the Army will continue to set the force to meet future requirements. The goal is for all returning active duty units to achieve a sufficient level of combat readiness within six months of their equipment's arrival at home station. RC units will take longer to achieve their desired level of readiness, and the goal for them is to reestablish readiness within one year. These reconstitution efforts—involving people, equipment, and training—will culminate with a certification exercise to ensure the ability to meet near-term Combatant Commanders' requirements.

A final equipping initiative that has been integrated where possible into the reset process is the Army's ongoing recapitalization effort. Recapitalization, which is the rebuild and selected upgrade of currently fielded systems to ensure their operational readiness, aims at improving unit effectiveness and warfighting capability, extending service life, and reducing operating and support costs. Because the need to recapitalize systems is significant and exceeds available resources, the Army has focused on selected units and prioritized systems.

Balancing Current and Future Readiness and Capabilities

Congruent with Office of the Secretary of Defense (OSD) risk-management directives, the Army frames the constant change of transformation through the interaction of the continuously evolving capabilities of the current to future force. The current force is today's operational Army. The Army organizes, trains, and equips the current force to conduct operations as part of the Joint Force. The current force's operational experience, insights from joint concept development, experimentation processes, and science and technology allows the Army to rapidly improve capabilities of the current force while informing future force capabilities.

The future force is the operational force the Army continuously seeks to become. It is the strategically responsive, joint interdependent, precision maneuver force that will be dominant across the full range of military operations envisioned in the future global security environment. The Army accelerates promising future force capabilities into the current force to reduce risk to our Soldiers today.

Prior to the events of 11 September 2001, the Army assumed greater risk in the current force as it built toward the future force. Due to operational experiences associated with the global war on terrorism, the Army shifted resources to reduce operational risk and improve the capabilities of the current force. Through FY05, the Army rebuilt the balance between sustained warfighting requirements and transforming to meet future challenges. Balancing current and future force transformation requires careful determination about when and how we introduce change into the force. Too much, and we destabilize our formations. Too little, and we deny our Soldiers the most promising capabilities.

To manage this process, the Army has developed a comprehensive strategy that accelerates critical capabilities to our fighting forces while continuing to build a campaign-quality future force with joint and expeditionary capabilities. The FY06-11 FYDP was the first program plan to transition the Army to a war footing and to include programmed development of transformational capabilities. The program changes and risk mitigation measures in the FY07-11 plan continue the balancing trend of sustaining Army transformation initiatives while ensuring current readiness (Figure 5).

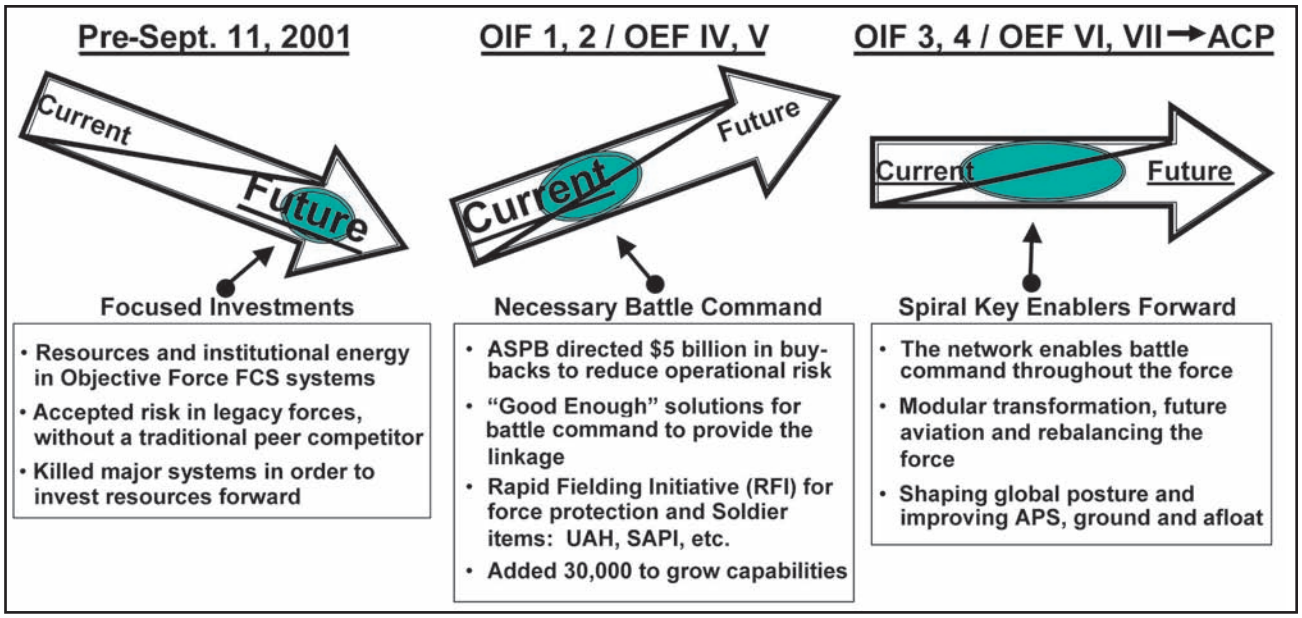


Figure 5. Programming Balance

Campaign-Quality Army with Joint and Expeditionary Capabilities

Our continuing missions demonstrate the Army's unique durability, versatility and ability to control land, people and resources. The Army maintains a nonnegotiable commitment to fight and win this nation's wars. An essential component of this commitment is the Army's ability to sustain operations and establish suitable conditions necessary to achieve favorable resolution of conflicts. This requires the Army to sustain and adapt its operations. This is the Army's preeminent challenge today. The Army must reconcile expeditionary agility and responsiveness with staying power, durability and adaptability to achieve victory.

The Army must also remain aware that its forces are integral components of the Joint Force. Each Service excels at employing a wide variety of capabilities within specific domains—land, sea, air, space and cyber—to create overwhelming dilemmas for our enemies. Current and future challenges in the operational environment demand unprecedented levels of joint interdependence. This interdependence is a purposeful reliance by the Army on its sister Services to maximize complementary and reinforcing effects while minimizing individual service vulnerabilities.

The prerequisites of this common commitment to interdependence are broad understanding of the strengths and limitations of each Service's capabilities, clear agreement about how those capabilities will be integrated during operational employment, and the absolute mutual confidence that capabilities will be employed as intended. The Army is implementing close collaboration with other Services and joint organizations as it develops doctrine and capabilities that foster joint interdependence. Further, the Army is building joint-capable organizations at lower organizational levels to make joint interdependence a reality.

Modular Reorganization

Not only must the Army sustain decisive operations for as long as necessary to allow for political favorable resolution, Army forces must also be ready to adapt to changes

across the range of military operations and against adaptive adversaries. To maximize force effectiveness, the Army is reorganizing to a modular, brigade-based force to achieve three primary goals:

- Increase the number of available BCTs to meet operational commitments while maintaining combat effectiveness that is equal or better than that of previous divisional BCTs.

- Create combat and support formations of common organizational designs that can be tailored to meet the varied demands of the regional Combatant Commanders—reducing joint planning and execution complexities.

- Redesign organizations to perform as integral parts of the Joint Force—making them more effective across the range of military operations and enhancing their ability to contribute to joint, interagency, and multinational efforts.

This modular conversion is a total Army effort affecting nearly every combat and support organization in our inventory (Figure 6). Most combat formations and headquarters will be completed by 2008; theater Army headquarters will be completed by 2009, and Support Brigades will be completed by 2011.

Though quickly implemented in response to the global war on terrorism, these organizational changes are a well-measured response. Organization designs are consistent with concepts and methods of operation articulated within the Army's TRADOC *Pamphlet 525-3-0, The Army in Joint Operations: The Army's Future Force Capstone Concept, 2015-2024*, but these designs are tempered by the tech-

BRIGADE-BASED ARMY

	AC	ARNG	USAR
Force Application			
Brigade Combat Team (BCT) *Total*	42 *	28 *	
Heavy Brigade Combat Team (HBCT)	18	6	
Stryker Brigade Combat Team (SBCT)	6	1	
Infantry Brigade Combat Team (IBCT)	17	21	
Armored Cavalry Regiment (ACR)	1		
Special Forces Group (Airborne) (SFG(A))	5	2	
Civil Affairs Brigades (CA)	1		8
Psychological Operations Groups (PSYOP)	1		2
Ranger Regiment	1		
Combat Aviation Brigade (CAB) *Total*	11	7	
CAB (Heavy)	6	2	
CAB (Medium)	4		
CAB (Light)	1		
CAB (Air Expeditionary)		5	
Theater Aviation Brigade	1	5	1
Special Operations Aviation Regiment (SOAR)	1		
Fires Brigade	6 *	7 *	
Information Operations Group	———	TBD	———
Command and Control			
Army Service Component Commands	9 **		
Corps	3		
Division	10	8	
Signal Brigade	7	2	1

	AC	ARNG	USAR
Protection			
Combat Support Brigade (Maneuver Enhancement) (CSB(ME))	3	14 *	2
Engineer Brigade (EN)	4	8 *	4
Military Police Brigade and Criminal Investigation Detachments (MP/CID)	4	2	
Internment/Resettlement Brigade (I/R)		1	3
Air Defense Brigade	4	2	
Chemical Brigade (NBC)	1 ***	1	1
Criminal Investigation Detachment (CID)	2		
National Missile Defense Brigade (NMD)		1	
Focused Logistics			
Sustainment Brigade (SUST)	13	9	8
Ordnance Group (Explosive Ordnance Disposal (EOD))	2	1	
Quartermaster Group (Petroleum, Oil, and Lubricants (POL))	1		3
Regional Support Groups		17	25
Medical Support Command	4		10
Battlespace Awareness			
Intelligence Brigade (MI)	8	1	
Electronic Warfare Group (EW)	2		
Battlefield Surveillance Brigade (BFSB)	3	2	
Miscellaneous ****			
Financial Management Center (FMC)	2		5
Space Brigade	1		

* Structure decisions still in progress as of 25 FEB 06.
** 5 Theater Army Headquarters
3 Functional ASCCs
1 Non-modular Army Headquarters (EUSA)

*** Does not include Homeland Defense capabilities

**** Training units and other Soldier support functions to be captured in Army Campaign Plan

Figure 6. Army Operating Forces Modular Conversion

nological capabilities that are reasonably available within the near term. Standardized and enhanced battle command capabilities that improve joint interdependency and situational awareness enable this change. Networked battle command, improved intelligence, and robust target acquisition systems enable our Soldiers to fight for and maintain information superiority with faster speeds of command, enhanced self-synchronization between units, and dramatically improved combat effectiveness. See Annex B of the *2006 Army Modernization Plan* for organizational details.

Restructuring the Force

As the Army creates modular capabilities, it is also restructuring for a more effective mix between AC and RC forces. The goal is to enable the AC to support the first 30 days of an expeditionary operation in order to reduce short-notice involuntary call-ups of RC forces. The rebalancing effort also establishes conditions where the Army has sufficient depth of forces across the AC and RC to support sustained operations while providing predictability for Soldiers and families. In FY05, the Army restructured almost one-third of the over 100,000 personnel spaces to be rebalanced. Through FY06, the Army will reach the halfway point of restructuring as it seeks to rectify imbalances within the force.

Despite these changes, the Army will remain challenged to meet anticipated requirements. The President and Congress alleviated much of this stress by providing us with a temporary 30,000 Soldier increase in our AC operating strength. In September 2005, the Army revised downward the period of time that it estimated it could afford to maintain a 512,400 force. To further grow the operational forces within the Army during a period of declining budgets and manpower authorizations, we are conducting a Total Army Analysis (TAA) process to design 482,400 AC and 555,000 RC forces that appropriately balance risk.

This updated TAA and its aggressive restructuring effort will boost the operating force by 40,000 Soldiers over the next six years. These 40,000 spaces will be freed by personnel policies that gain efficiencies in the institutional base.

Army Posture

The Army is also adjusting its global force posture to meet the needs of Combatant Commanders. We are taking steps to accelerate our strategic responsiveness while simultaneously reducing our overseas footprint and exposure. To enhance its strategic responsiveness, the Army is improving its ability to rapidly deploy to austere fighting environment, fight on arrival throughout the battlespace, and sustain operations until victorious. A few of the initiatives to improve responsiveness are:

- Establishing a comprehensive ARFORGEN process to provide Combatant Commanders and civil authorities with rapidly deployable and employable Army forces.
- Resetting Army prepositioned equipment sets into modular configurations.
- Building modular capabilities that improve theater force reception and deployed logistics.
- Identifying and improving infrastructure at critical power projection installations to increase support for mobilization, demobilization, and rapid deployment.
- Updating institutional processes to prepare forces for rapid deployments and to

support forces in sustained expeditionary operations.

Parallel with Army efforts to improve responsiveness, the Army is repositioning its ground forces to meet a unit rotation model that is synchronized to ARFORGEN. These efforts include Army support of BRAC and IGPBS efforts. We are stationing forces in the United States based on the critical factors of training resources and power projection. In Europe and the Pacific, we will maintain smaller forward-presence forces while stationing more agile and expeditionary forces to respond to contingencies. In the Middle East and elsewhere, we will maintain rotational presence while eliminating many of our permanent bases. See Annex B of the *2006 Army Modernization Plan* for Army posture for BCTs and Support Brigades.

Army Force Generation

The new strategic context of continuous operations renders unrealistic the old Army readiness paradigm of "all ready, all the time." Continuous full-spectrum expeditionary operations are the new reality. To meet this new strategic context, the Army is developing a process of force generation to provide Combatant Commanders and civil authorities rapidly deployable, employable, and sustainable force capabilities packages tailored to specific mission requirements. Implementation of ARFORGEN cuts across the entire Army. While having a profound effect on operating forces, ARFORGEN also shapes the ways the institutional base executes Army Title 10 and executive agent functions.

ARFORGEN leverages modular unit designs and operational cycles to provide a sustained deployment posture of operationally ready units in predictable patterns. The process retains the capability to surge combat power for major combat operations. The ARFORGEN process assists commanders to identify predictable deployment windows and manage readiness and training of forces accordingly. These windows are based on the objective cyclic rotation rates of AC and RC forces: one deployment in three years for the AC, and one deployment in six years for the RC.

The ARFORGEN process creates operational readiness cycles where individual units increase their readiness over time, culminating in full mission readiness and availability to deploy. Manning, equipping, resourcing, and training processes are synchronized to the ARFORGEN process. To achieve the readiness progression required by operational readiness cycles, units transition through three ARFORGEN-defined readiness pools:

- **Reset/Train**: Units recover from previous deployments, reconstitute, reset equipment, receive new equipment, assign new personnel, and train to achieve the required unit capability level necessary to enter the READY force pool.
- **Ready**: Units are assessed as ready to conduct mission preparation and higher-level collective training with other operational headquarters for upcoming missions. These units are also eligible to fill operational surge requirements, if necessary.
- **Available**: Units that are within their assigned window for potential deployment. Units will be sourced against operational or contingency requirements.

Like pieces of a puzzle, ARFORGEN is a necessary complement to ensure that modular force conversion, restructuring, and restationing initiatives achieve the Army's objective to be a campaign-quality, joint and expeditionary force. Modular Army formations stationed at

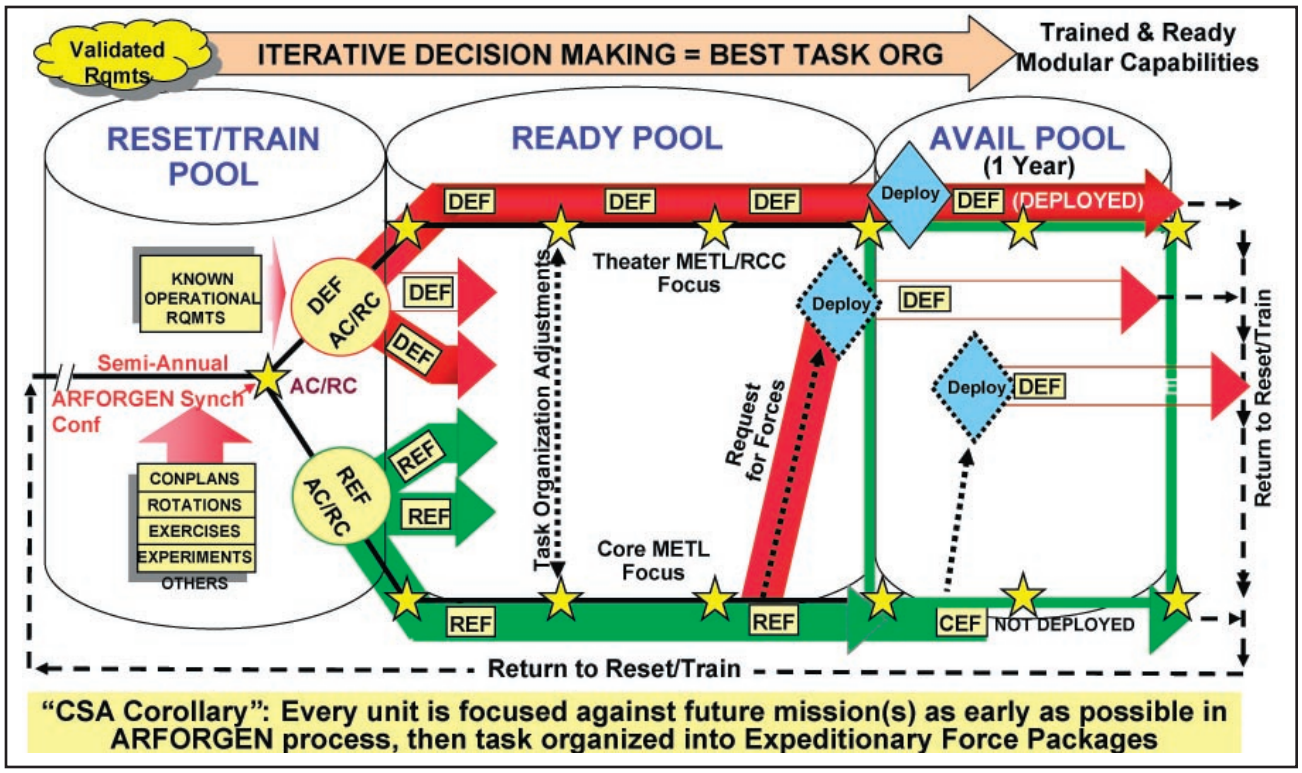


Figure 7. ARFORGEN

UNITS	FY10 Force Mix	RESET / TRAIN FORCE POOL	READY FORCE POOL	AVAILABLE FORCE POOL
Operational HQs	19			
AC BCTs	HVY 19 SBCT 6 INF 17 42	HVY 5 SBCT 2 INF 4 11	HVY 8 SBCT 2 INF 7 17 ← 31 deployable →	HVY 6 SBCT 2 INF 6 14
RC BCTs	HVY 6 SBCT 1 INF 21 28	HVY 3 SBCT 1 INF 10 14	HVY 2 SBCT 0 INF 7 9 ← 14 deployable →	HVY 1 SBCT 0 INF 4 5
AC Support Brigades	CAB 11 SUSTAIN 13 FIRES 5 BFSB 3 CSB(ME) 3	CAB 3 SUSTAIN 3 FIRES 1 BFSB 1 CSB(ME) 1	CAB 4 SUSTAIN 6 FIRES 2 BFSB 1 CSB(ME) 1	CAB 4 SUSTAIN 4 FIRES 2 BFSB 1 CSB(ME) 1
RC Support Brigades	CAB 7 SUSTAIN 17 FIRES 7 CSB(ME) 14	CAB 4 SUSTAIN 9 FIRES 4 CSB(ME) 7	CAB 2 SUSTAIN 5 FIRES 2 CSB(ME) 6	CAB 1 SUSTAIN 3 FIRES 1 CSB(ME) 2
Increasing Unit Readiness		Not Ready or Available for MCO ≈ 17% - 25% of AC ≈ 50% of RC	Surge Capability ≈ 42% - 50% of AC ≈ 33% of RC	Available or Deployed ≈ 33% of AC ≈ 17% of RC
* Force Pool Distribution Rules:		AC: 1/4 RC: 1/2	AC: 5/12 RC: 1/3	AC: 1/3 RC: 1/6

NOTIONAL

Figure 8. ARFORGEN

power projection platforms are pooled into force packages under ARFORGEN to make expeditionary operations easier to plan and execute. Restructuring across the AC and RC optimizes the entire Army to the right capabilities packages for sustained operations. Implementing these interlocking concepts will relieve stress on the force, provide time to train, create more predictable deployment schedules, and enable the Army to maintain a continuous supply of ready land power to Combatant Commanders and civil authorities.

Life-Cycle Management

Over the past two years, the Army has implemented an improved manning system that enhances unit readiness by increasing stability and predictability for Soldiers, commanders, and families. The Army created a personnel life-cycle management program for AC BCTs that complements the new rotation-based system of global force management. These personnel systems and life-cycle management increases stability for individual Soldiers and their families by retaining them at their assignments longer. Second, life-cycle management synchronizes Soldiers' assignments to their units' operational cycles, providing more capable, deployable, and prepared formations.

Transforming the Way We Do Business

The Army is aggressively seeking ways to prioritize our limited resources to meet our most strategically significant requirements while increasing our individual and organizational productivity. To accomplish this, the Army is transforming the way we do business by adapting many components of its existing processes, to include:

- Adapting the institutional base of the Army in terms of roles and resources to gain efficiencies and simultaneously applying personnel savings from this restructuring to increase capabilities in the operating force.

- Increasing the productivity of business processes to minimize the impact of fiscal pressures and emerging requirements. Enhanced productivity results from reforming value chains while simultaneously divesting non-core functions.

- Improving the level of proficiency of our organizational leaders to implement disciplined and measurable approaches to reduce waste and streamline organizations—following Lean Six Sigma and other best practices.

Business transformation will follow an aggressive schedule, with Lean Six Sigma deployment across the Army starting in FY06. By applying these techniques, the Army will develop a competitive advantage required by our operational environment. In short, we can eliminate waste and focus on providing trained, equipped, educated, experienced, and manned forces to the Combatant Commanders.

Life-Cycle Management Commands

In conjunction with the these current and future efforts to realize efficiencies, boost productivity, and enhance readiness through business transformation, the Army's materiel community has already made significant progress in better integrating the materiel development and sustainment processes. Historically, almost 70 percent of a system's total costs were incurred once the system had entered the operations and sustainment phase. As a result, decisions made during

design and development place an enormous impact on the overall cost, sustainment, and readiness of items introduced into the Army inventory.

In August 2004, the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)) and the Commanding General, Army Materiel Command (AMC) established Life-Cycle Management Commands (LCMCs). Their purpose was to integrate more effectively the Army's acquisition, logistics and technology (AL&T) communities, and introduce a more holistic and long-term approach to system acquisition and management.

Compliant with the Goldwater-Nichols Department of Defense Act of 1986, LCMCs integrate AL&T responsibilities and authorities into a closer working relationship between AMC's major subordinate commands and their respective program executive officers (PEO) and program managers (PM), controlled by the Army Acquisition Executive, without compromising oversight. Each LCMC is focused on supporting a specific family of materiel (aviation, ground systems, electronics and ammunition), and fosters a more collaborative and agile framework that tailors the capacities of a more synchronized sustaining base to the unique needs of each program. (Figure 9)

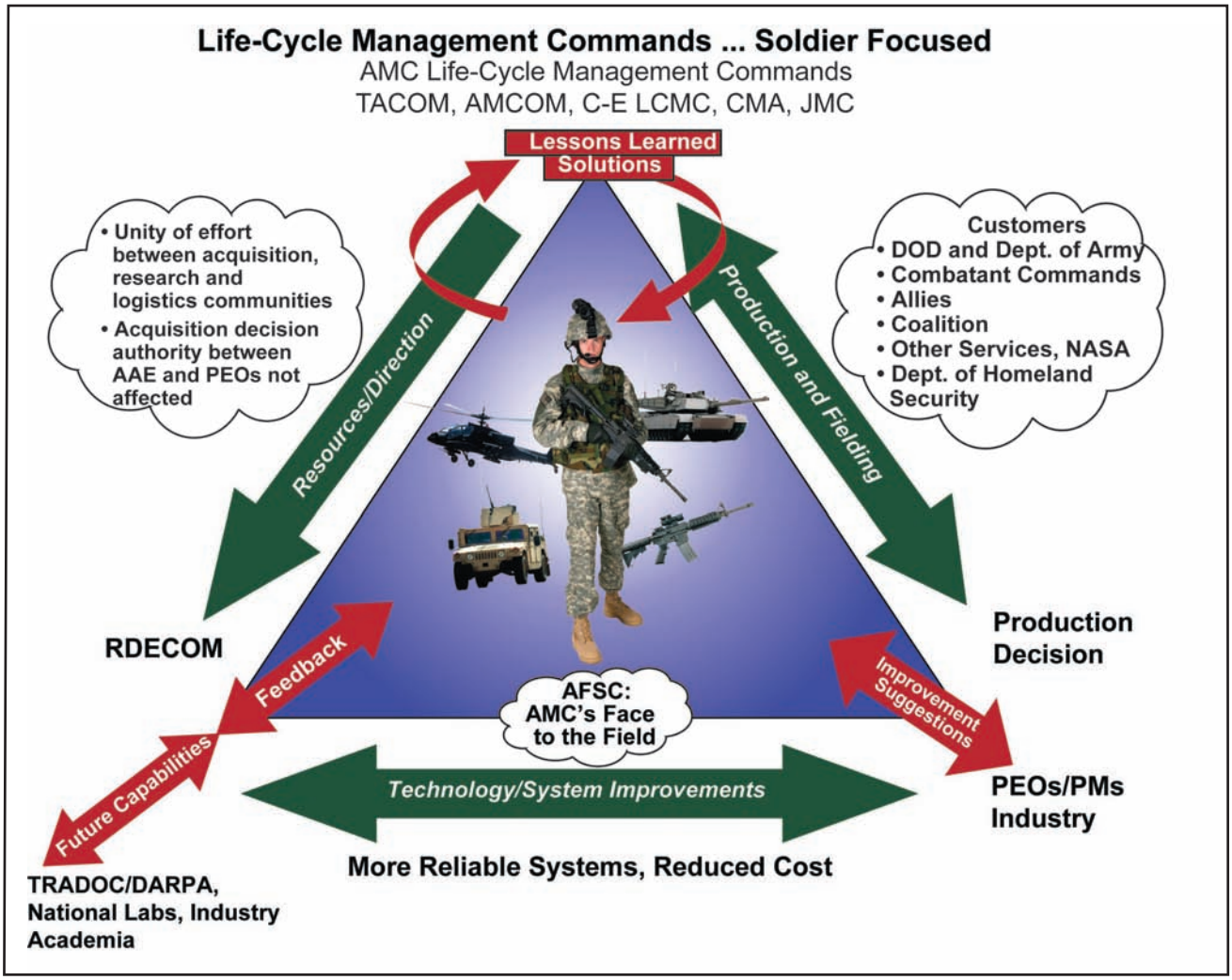


Figure 9. Life-Cycle Management Commands

LCMC Objectives

- Ensure responsiveness to the warfighter
- Improve coordination among AL&T processes
- Integrate significant elements of AL&T leadership responsibilities and authority
- Improve system supportability and minimize life-cycle management costs

LCMCs benefit the Army by improving the balance between performance and sustainment throughout a system's entire life cycle. In addition, this realignment of responsibilities accelerates the responsiveness of the entire materiel community by providing Soldiers with a single entity that can reach across the entire sustaining base and quickly addresses their needs with one voice. Overall, this initiative complements other ongoing transformational activities by contributing to more consistent and higher levels of force readiness.

Accelerating Change within the Current Force

Over the past two years, the Army has significantly accelerated the tempo of transformation. The Army continues to adapt the resource processes so they become more flexible, dynamic, transparent and responsive. Soldiers remain the centerpiece of our formations. Their immediate demands are urgent, and fielding capabilities in the near term may outweigh preserving longer-term stability in existing programs.

The Army is changing almost every aspect of its resource process. The Army generates requirements by looking at them from a joint context to ensure these requirements are congruent with DOD transformation efforts. We are also placing more emphasis on the needs of engaged commanders—fulfilling immediate, unprogrammed requirements while balancing resources to ensure long-term viability of the force. Finally, the Army is dramatically accelerating acquisition processes to meet the needs of Joint Force commanders today.

Through the Rapid Fielding Initiative (RFI), the Army is purchasing and fielding state-of-the-art equipment at an unprecedented pace. Examples are full fielding of improved body armor to all Soldiers operating in Afghanistan and Iraq, advanced thermal sights and personal equipment, and a variety of state-of-the-art mission-essential items. Congressional support for regular budget and supplemental spending requests enables the Army to put this improved equipment in the hands of Soldiers.

Also with this support, the Army continues to field innovative technology solutions directly to operational commanders through the Rapid Equipping Force (REF). Such innovative solutions include a variety of robotic systems and other technologies used in high-risk searches, technologies to counter improvised explosive devices, and extensive improvements in the armor protection of armored and light-skinned vehicles. Typically the REF cycle is measured in weeks—sometimes days—from field commanders articulating a requirement to the Army providing a solution.

The accelerated fielding of selected capabilities through a spiral process will also include technical refreshment and continued development and fielding of new capabilities associated with mature systems in the acquisition process. This includes fielding of additional SBCTs; RFI to equip Soldiers with increased lethality, force protection, survivability, and squad communications; fielding of systems to retain and improve situational dominance

through comprehensive and joint-interoperable C4ISR architectures—Warfighter Information Network-Tactical (WIN-T), the Joint Tactical Radio System (JTRS), and the Distributed Common Ground System-Army (DCGS-A); fielding of Patriot/Medium Extended Air Defense System (MEADS) to augment cruise missile defense; fielding of digital battle command capabilities through systems such as the Force XXI Battle Command, Brigade and Below (FBCB2) and others; accelerating crew protection and ASE initiatives and adding an additional 825 helicopters as well as accelerating unmanned aerial systems.

Future Force Capabilities Embodied in the Future Combat Systems

The primary goal of Army transformation is development of the future force. This force will be balanced across a mix of light, medium, and heavy formations and will be optimized for strategic versatility. Further, the Army is designing the future force to expand the options available to Joint Force commanders amidst the frequently changing requirements of the emerging operating environment. Future force attributes, capabilities, and operational themes are defined in TRADOC Pamphlet 525-3-0.

The foundation of our future force is the FCS-equipped BCT, though there will also be an array of FCS-enabled HBCTs, IBCTs, and SBCTs that will comprise the entire force. FCS is a comprehensive modernization program internal to Army transformation that will provide the joint team with responsive full-spectrum abilities to succeed in both regular and irregular environments. The Army will provide dominant land power to the Joint Force commander well into the future, but future enemies and anti-access strategies will increasingly exploit our vulnerabilities unless we take action now. The FCS is the Army's primary transformation program to increase capabilities and reduce or eliminate vulnerabilities in the future force. Current force capabilities such as the SBCT are optimized for small-scale contingencies, but the FCS-equipped BCT may conduct early-entry major combat operations with significantly less operational risk.

The new way of fighting with the FCS-equipped BCT is to see first, understand first, and act first to finish decisively. With four times more reconnaissance platoons in the brigade, plus the intelligence analysts and enhanced battle command network, the modular brigade can develop the situation before becoming decisively engaged by the enemy. Leaders will know where their friendly forces are located, where the enemy is located, and the best way to maneuver to accomplish the mission. The network enables the brigade and battalion commanders to rapidly change plans and issue new instructions to seize opportunities on the battlefield without losing command and control of their forces. Subordinate units are better equipped to "self-synchronize," or act on their own initiative in accordance with their commander's intent because they understand what is going on. A RAND study has validated these tenets of net-centric operations in the modular Stryker brigade. Most important, the common operating system on the network will dramatically improve the interoperability among maneuver, intelligence, fire support, engineer, air defense and service support information systems, requiring significantly less time to train Soldiers to use improvised solutions to share information. Improved communications will enable leaders to have full battle command capability while on the move, improving the speed and agility of our forces in the attack. The organic unmanned systems will collect more information about the enemy and reduce risk to Soldiers. The Non-Line-of-Sight Cannon (NLOS-C) increases

the flexibility of fire support to support troops in combat. In addition to materiel systems, the Army has made the organizational, doctrinal and leader development steps necessary to exploit the full potential of FCS capabilities and network-enabled modes of operation.

FCS remains at the heart of the Army's strategy to mitigate risk using the current to future force risk construct (Figure 10). The Army used the BCT operational and organizational plan as the starting point to create a modular, brigade-based Army. Through its modular conversion efforts, the Army is rapidly moving the current force to the characteristics envisioned for the FCS-equipped BCT. In turn, this will enable BCTs to quickly transition to FCS-equipped BCTs and FCS-enabled methods of operation. Further, the modular design improves current force effectiveness and reduces operational risk.

At the same time, the Army is accelerating promising technologies into the current force to improve the current force's survivability; intelligence, surveillance, and reconnaissance; and joint interdependence. Just as emerging FCS capabilities enhance the current force, the current force's operational experience informs the FCS program, further mitigating future challenges and force management risks.

FCS Components and Capabilities

Future Combat Systems includes 18+1+1 systems consisting of unattended ground sensors (UGS); two unattended munitions, the Non-Line-of-Sight Launch System (NLOS-LS)

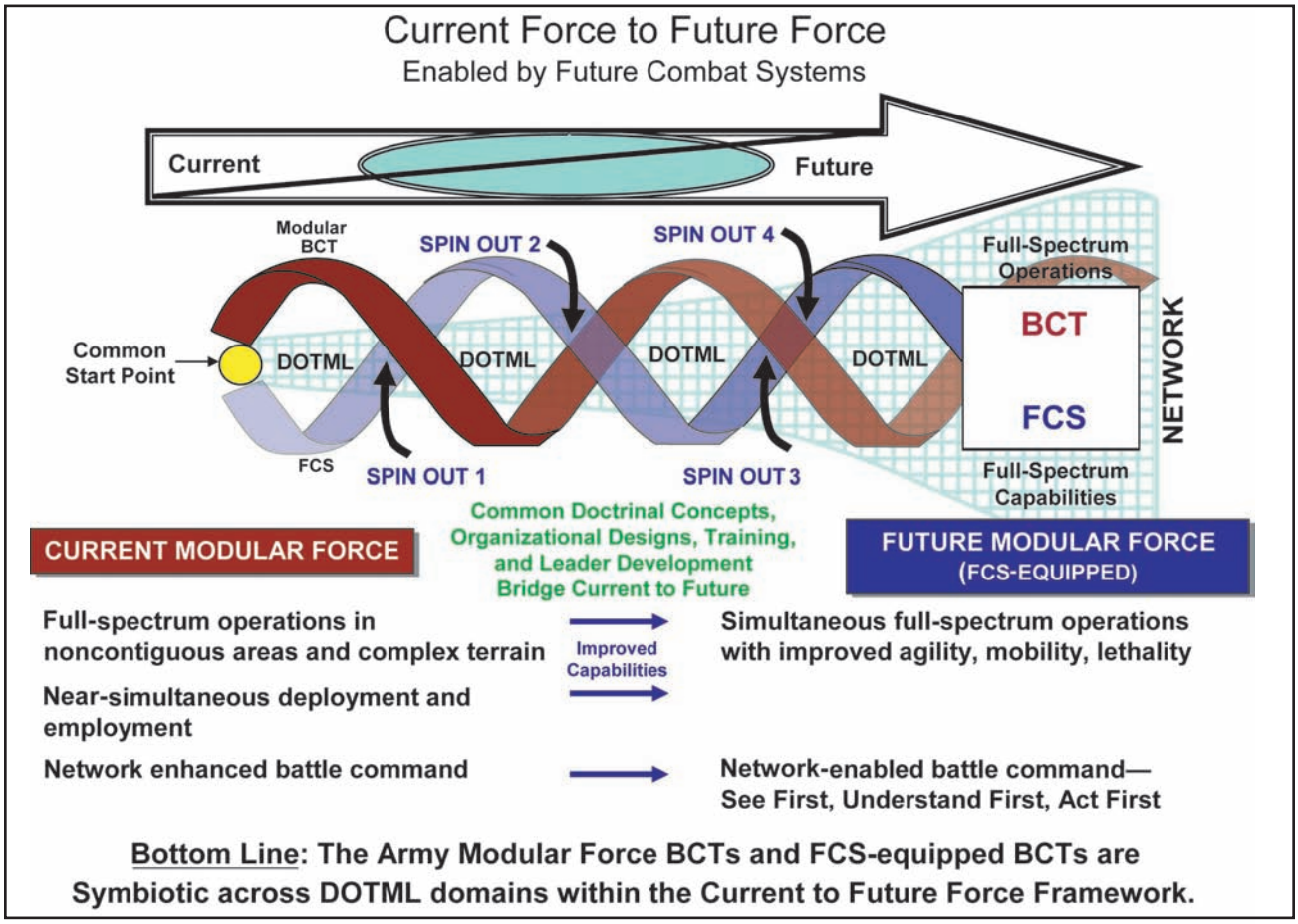


Figure 10. Risk Adjudication

and Intelligent Munitions System (IMS); four classes of unmanned aerial vehicles (UAVs) organic to platoon, company, battalion and BCT echelons; three classes of unmanned ground vehicles, the Armed Robotic Vehicle (ARV), Small Unmanned Ground Vehicle (SUGV), and Multifunctional Utility/Logistics and Equipment Vehicle (MULE); and the eight manned ground vehicles (18 individual systems); plus the network (18+1); plus the Soldier (18+1+1) (Figure 11).

FCS is the fastest and surest way to modernize the Army. The FCS-equipped BCT will consist of three FCS-equipped combined arms battalions; an NLOS-C battalion; an armed reconnaissance squadron; a forward support battalion (FSB); a brigade intelligence and communications company (BICC); and a Headquarters company. The FCS-equipped BCT will be the Army's future tactical warfighting echelon, a dominant ground combat force that complements the dominant joint team. Although optimized for offensive operations, the FCS-equipped BCT will have the ability to execute a full spectrum of operations. FCS will improve the strategic deployability and operational maneuver capability of ground combat formations without sacrificing lethality or survivability.

FCS will use evolutionary acquisition to develop, field, and upgrade FCS throughout its life cycle. On 22 July 2004, Army officials announced plans to accelerate the delivery of selected Future Combat Systems to the current force. The Army will accelerate fielding of select FCS capabilities (called spin outs) to reduce operational risk to the current force. The plan expands the scope of the program's system development and demonstration (SDD) phase by adding four discrete "spin

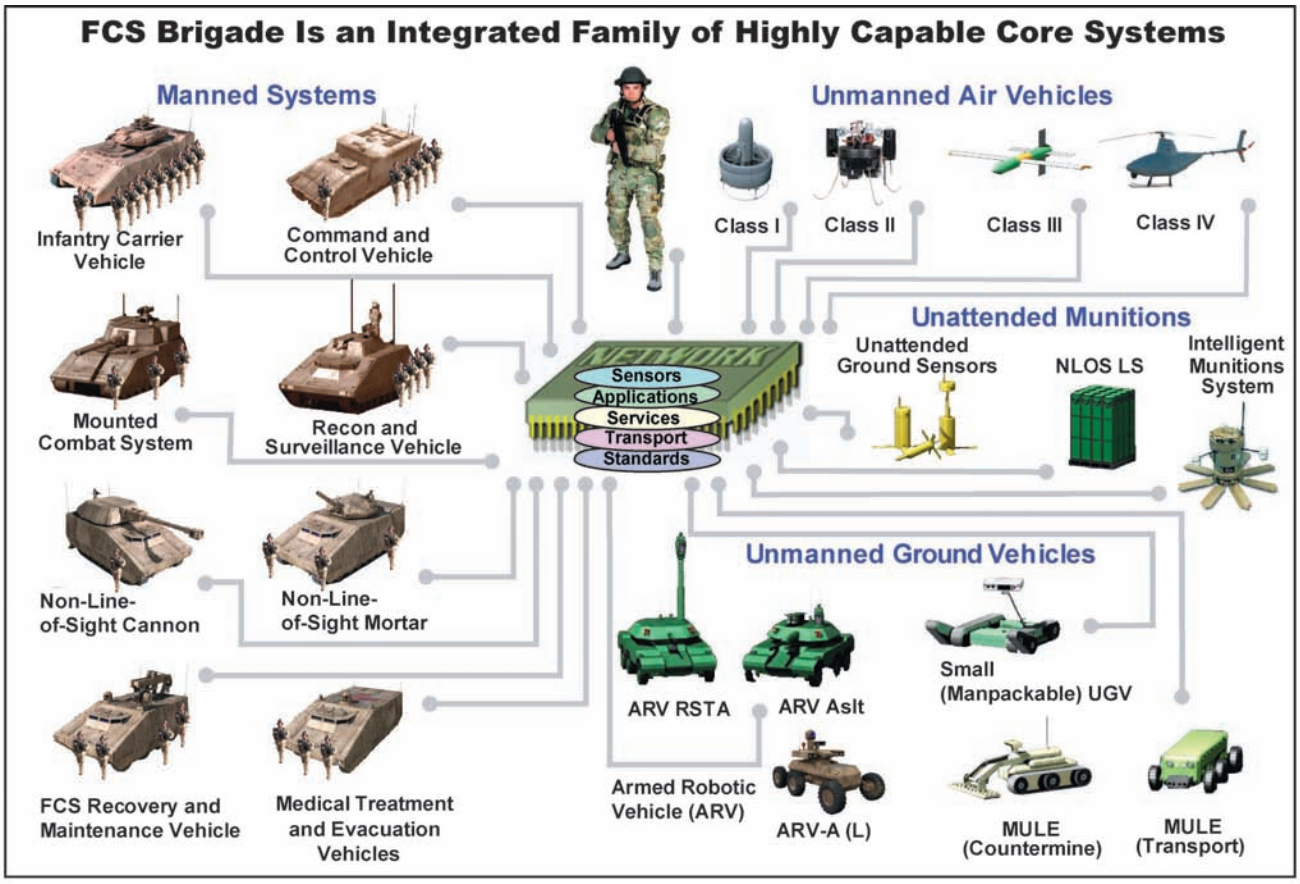


Figure 11. FCS Network

outs" of capabilities at two-year increments for the current force. Spin Out 1 will begin fielding in FY08 and consist of prototypes fielded to the evaluation BCT (EBCT) for their use and evaluation. The EBCT will be an existing HBCT which will be used to test and evaluate FCS capabilities to determine if suitable for later fielding to current force units. Following successful evaluation, production and fielding of Spin Out 1 will commence to current force units in FY10. This process will be repeated for each successive spin out. By FY14, the Army force structure will include one BCT equipped with all 18 + 1 FCS core systems and additional BCTs with embedded FCS capability. The program fields a combined arms battalion in FY14 and a full-up BCT by FY17. This is the focal point of this adjustment: providing the current force with FCS capability sooner rather than later. (For more information on spin outs, see section "Inserting New Technologies and Capabilities" and Figure 15 on pages 40-41.)

FCS is now in the SDD phase. The FCS acquisition program was approved by the Defense Acquisition Board (DAB) in May 2003. FCS has been designated a Joint Services program with an Army and Marine Joint Program Office (JPO) established. Its future capabilities will, therefore, significantly enhance all U.S. land power.

Integrated Network

The Army's FCS network allows the FCS family of systems to operate as a cohesive system of systems where the whole of its capabilities is greater than the sum of its parts. As an integral part of the Army's transformation, the network and its logistics and embedded training systems enable the future force to employ revolutionary operational and organizational concepts. The network enables Soldiers to perceive, comprehend, shape, and dominate the future battlefield at unprecedented levels as defined by the FCS Operational Requirements Document.

The FCS network consists of four overarching building blocks: system-of-systems common operating environment; battle command software; communications and computers; and intelligence, reconnaissance and surveillance systems. The four building blocks synergistically interact enabling the future force to see first, understand first, act first and finish decisively.

2006 ARMY MODERNIZATION PLAN

Army Modernization

Modernization Strategy—Balanced Modernization

Modernization is a continuous process of integrating new DOTMLPF solutions to develop and field capabilities for the Army to provide to the Joint Force in NDS, NMS and all assigned missions. Modernization activities are facilitated and optimized by sound modernization and investment strategies that are specifically designed to implement the Army's transformation process. The modernization and investment strategies also establish common terms of reference for all modernization activities and, very importantly, provide clear priorities and focus for the allocation of resources for equipment expenditures. The overall Army modernization strategy remains focused on providing those capabilities necessary for the Army forces deployed and at war today—the current force—that is the foundation of the Army's strategic commitment to the nation, while simultaneously supporting a transformation process to ensure that those capabilities essential for the future are being developed. The investment strategy in support of modernization describes the process used in deciding how to allocate monies across competing priorities in order to obtain the best capability for each dollar spent. In this regard, integrated system-of-system architectures are analyzed to provide the underpinning technical data needed to make sound decisions on capability investment strategies.

In support of the overall goal of maintaining and improving the readiness of today's Army while also transforming to a more responsive and capable force, the Army has developed a coordinated and comprehensive strategy toward the goal of equipping and reorganizing forces. This strategy can be described best as one of "balanced modernization," which seeks to develop and field combat-capable units through an appropriate mix of significant organizational restructuring into more modular units, insertion of new capabilities where and when feasible, selective procurement and fielding of new equipment (modernization); and restoring and preserving readiness of current equipment (reset), including the rebuilding and upgrading of key existing equipment through recapitalization. Overall, Army modernization efforts are placed into two fundamental categories:

- **Modernization**: the development and fielding of improved operational capabilities through a combination of organizational restructuring into modular formations, the insertion of new technologies into existing systems and units, and/or the procurement of new systems with improved capabilities. All of these measures must be complemented by effective Soldier and leader training and education in order to reach their full potential.

- **Reset**: the restoration and/or preservation of the combat readiness of units, returning from or preparing for operational deployments, through the repair or replacement of end items, parts, assemblies and subassemblies that are worn or broken; essential retraining and application of lessons learned; and readjustment of prepositioned stocks of equipment and

munitions. Incorporates recapitalization, which is the rebuild and selected upgrade of currently fielded systems.

The modernization strategy (Figure 12) also consists of the following two components, which help define a clearer focus for its implementation:

- Maintaining and enhancing capabilities of the current force to meet all strategic and operational requirements. This includes restoring and improving the readiness of units returning from or preparing for operations; the major initiative underway to restructure units into more responsive and capable modular formations; the continued fielding of immediate operational capabilities by organizing and equipping seven brigade-sized units outfitted with a family of internetted Stryker combat vehicles and other state-of-the-art, off-the-shelf technologies; and the accelerated effort to insert into existing systems and units, where feasible, newly developed capabilities derived from emerging technologies.

- Science and technology efforts to enable timely fielding of the future force (in particular FCS, which will be the foundation of that force) and to identify promising technologies and selected new, mature capabilities that can be fielded to current units through the process of iterative developments and insertions.

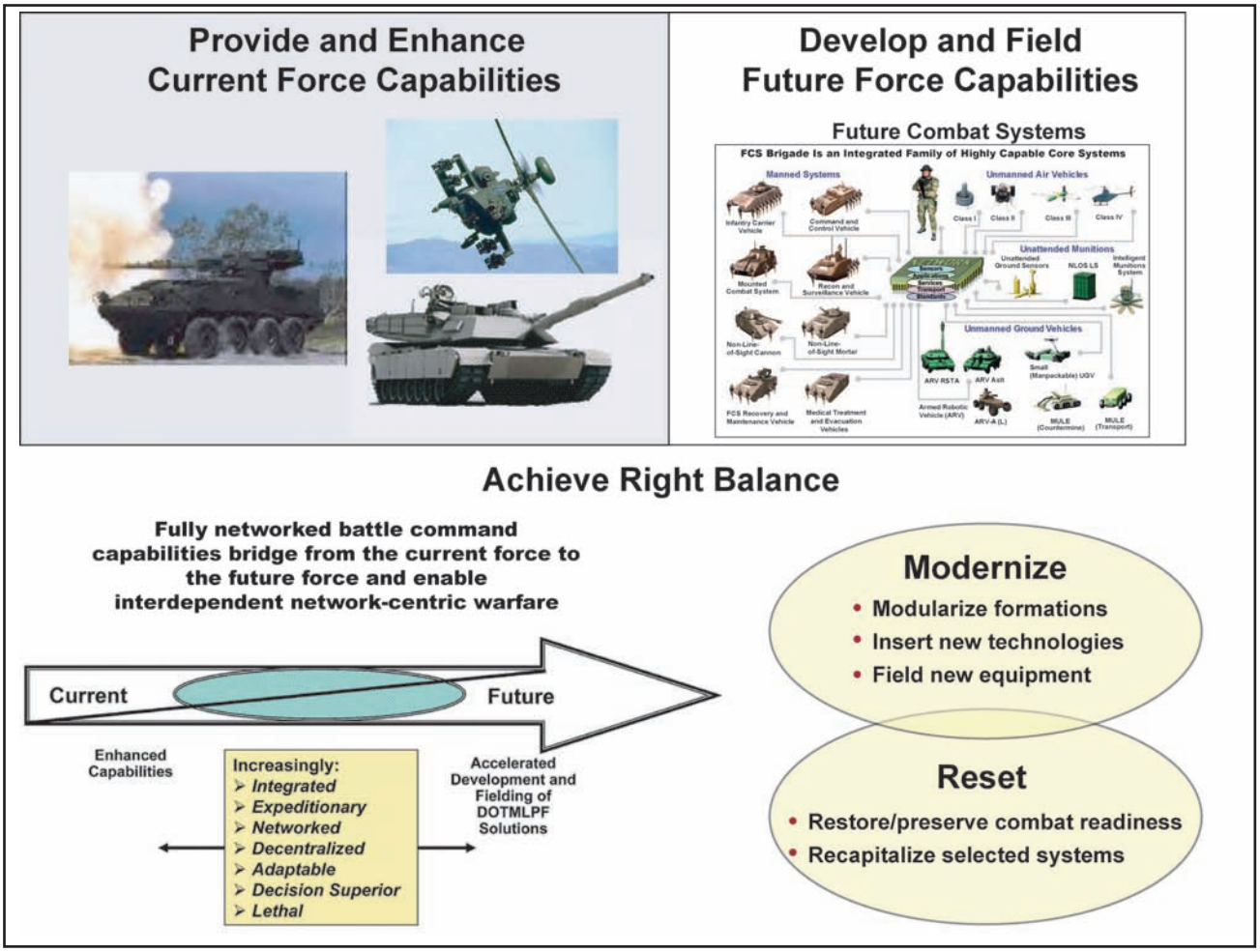


Figure 12. Balanced Modernization

The specific details of respective plans and programs and the balance within and between these two components as reflected in PB07 is the result of a dynamic and ongoing reassessment of the needs of the nation and the opportunities and resources available—all of which are addressed in The Army Plan. Clearly, the operational environment of a nation and Army at war is of overriding importance in this assessment and has had a direct impact on the changes in the overall modernization strategy, which were foreshadowed by Army initiatives in 2004 and subsequent refinements in 2005. Many of these initiatives, as well as other elements contained within PB07, developed as the result of an intensive process of self-examination directed by the Army leadership in an array of focus areas. A number of major changes, namely the move to modular formations, got underway in the first half of 2004, while other changes are to be implemented in subsequent budget cycles. The key point is that the Army has adapted its approach of balanced modernization—embedded within The Army Plan—and in light of lessons learned from recent operational experiences.

Integrating across the DOTMLPF to meet Warfighter Requirements

The Army's transformation process includes a comprehensive examination of the interrelationships among doctrine, organizations, training, materiel, leadership and education, personnel, and facilities. As the Army fields new capabilities to the current force and evolves into the future force, it must optimize investments by ensuring the proper synchronization between DOTMLPF requirements and DOTMLPF solutions.

Transforming the Army has placed new demands on how leaders and Soldiers are managed throughout the force. With over one million Soldiers geographically dispersed across the world, the Army's personnel community is developing new tools that will ensure the right Soldiers with the right skill sets are assigned to the proper units in a timely manner to ensure combat readiness. Enhanced personnel databases, leveraging web-based technologies, and implementing best business practices are examples of how the Army intends to improve the management of its military and civilian personnel. The increased operational demands have also required a re-examination of many long-standing personnel and basing practices, with the result that the Army is transitioning to an improved manning system designed to improve unit readiness by increasing stability and predictability for unit commanders, Soldiers and their families. This will place greater emphasis on building and sustaining cohesive, deployable combat-ready units.

Modernizing the Army with new systems and equipment is a critical undertaking that consumes vital and limited resources. Only by ensuring that equipment fielding is integrated and synchronized with total requirements can the Army be assured that resources are being used in a wise and cost-effective manner. The annexes to the *2006 Army Modernization Plan* provide a comprehensive and succinct review of the progress being made in modernizing across the DOTMLPF as the Army continuously transforms itself from the current to the future force.

Modernization Priorities

To achieve readiness of the force over time, the Army prioritizes its investment of limited resources in accordance with DOD guidance reflected in the Strategic Planning Guidance and Joint Programming Guidance, and further defined in The Army Plan, and in response to current operational requirements. There are two major categories of investments for

the Army—equipping and restructuring the current modular force, and developing and equipping the future force. Lately, there has been a significant shift in prioritization and emphasis as a result of the demands of the global war on terrorism. The first priority for the Army is to successfully pursue this war, which includes the requirement to maintain and improve the readiness of the current force. To do this, the Army is focusing on equipping Soldiers, resetting units returning from and preparing for deployments, and restructuring into modular units that will be available to support operational requirements in the ongoing war.

The next and related priority is to strengthen the Army's contributions to joint and combined warfighting capabilities by fielding new systems, inserting new technologies and capabilities into existing systems, fielding the capabilities of the SBCTs, and modernizing into future formations. Army SOF is another force modernization priority because of their unique capabilities and contributions to the Joint Force in the war on terrorism.

Finally, there is an ongoing focus on transforming the Army into a future force with even greater and more relevant capabilities. This transformation is based on the fielding of FCS and associated systems, though it also includes the corollary effort to identify and spin out emerging technologies whenever feasible. As mentioned earlier, in 2005 the Army formally refined and linked the FCS modernization program with the ongoing modular force transformation initiative within the overarching guidance in The Army Plan, which also includes important initiatives to train and educate our Soldiers and leaders. This linkage ensures that the implementation of the plan and its supporting integrated strategies provides for the continual transition and selective improvement of the current force as the new technologies and capabilities are being developed.

Investment Strategy

For the Army's investment strategy for PB07, the highest priority relates to those actions necessary to maintain essential operational readiness to fight and win the war on terrorism. To do this, the overall Army budget plan focuses on providing the Army's strategic objectives by building capable and modular forces, creating a more ready and relevant Army that is properly balanced among components, and ensuring a more stable and predictable lifestyle for Soldiers and their families. To accomplish this, the Army is prepared to make adjustments in existing lower-priority programs to cover some of the costs of this effort and to identify offsets and efficiencies totaling approximately $14 billion for the FYDP. The Army still depends to a large degree on congressional support in the form of supplemental appropriations to serve as bridging vehicles for supporting these operational requirements without jeopardizing the essential elements of the ongoing Army effort to fulfill DOD priorities, including transformation.

As part of its efforts to meet the current needs of Combatant Commanders, the Army accelerated transformation into a more capable and modular force. Previous time lines for fielding these new capabilities have been advanced, and the conversion to modular formations initiated in 2004 has been progressing at a steady pace.

Overall, the Army's plan focuses on three important areas that will support the requirements of Combatant Commanders as well as improve the quality of the force:

- Building a more capable Army by refocusing S&T and procurement to spin out promising technologies into the current force, and by conversion of units to create more responsive, standardized and flexible formations that are better able to support new operational requirements.

- Building a more relevant and ready Army by rebalancing the AC and RC, restationing through global posture initiatives, supporting global operations, and developing a joint interdependent logistics system.

- Building a more stable and predictable lifestyle by force stabilization initiatives that will reduce the effects of high deployment and operating tempos and will enhance the quality of life for Soldiers and their families.

The Army Modular Force

The Army today—our current force—is fully committed with over 240,000 Soldiers deployed in 120 countries during the past year. This force includes existing heavy and light divisions and separate brigades, newly fielded SBCTs, and SOF. In 2004, the Army initiated a significant restructuring effort to convert existing units into more modular formations, with the ultimate result being the creation of a rotational pool of 70 BCTs that will increase the flexibility and responsiveness of the current force while also posturing itself for future transformation efforts. This force is the foundation of today's readiness and the Army's contribution to the ongoing operations in the war on terrorism. Because of the urgent requirements of these operations, the Army has placed a high priority on efforts to ensure the readiness of units returning from or preparing for contingency missions. Also, as a result of the immediate demands of these missions, the Army has reexamined its investment strategy and has accelerated the application of new emerging capabilities into the current formations as soon as feasible. The combination of initiatives to restore readiness, convert units into more modular formations, and insert new capabilities are designed to make Army forces more ready and relevant for today's missions and supportive of changes that will further increase capabilities for tomorrow.

The SBCTs represent a recent and significant improvement to the current force. They have already demonstrated their tremendous versatility and survivability in demanding operational missions in Iraq. The third of these new brigades was fielded and deployed in Iraq in 2005, and the fourth unit will be operationally ready in 2006. Currently approved plans call for a total of seven of these responsive and uniquely capable units to be fielded by 2008, with one deployed to Europe by 2006 to represent a new and more strategically agile force in that theater as part of a global reposturing initiative.

Reset

As previously mentioned, the Army is involved in implementing a critical reset process to restore and improve the readiness of units returning from and preparing for operational deployments. This comprehensive process combines a variety of efforts that will repair and reconstitute units, simultaneously restructure them into modular formations, and recapitalize and modernize them whenever possible to improve overall capabilities. Reset will continue to be key to future readiness as the Army executes its responsibilities as part of the Joint Force.

Related to reset and as part of simultaneous efforts to improve the acquisition and fielding process to ensure that Soldiers have the latest available equipment, the Army has

implemented the Rapid Fielding Initiative to outfit Soldiers with improved combat gear as they deploy for missions. This process has already outfitted over 500,000 Soldiers with improved combat gear, and by the end of FY07 will complete the goal of equipping all operational forces (AC and RC) with the enhanced capabilities from a basic RFI kit containing about 58 essential items. This initiative dramatically improves the lethality, survivability and endurance for the Soldier—the Army's centerpiece.

In addition to RFI, the Army has instituted a Rapid Equipping Force process to provide commercial off-the-shelf or near-term developmental items to forces preparing for or engaged in operational missions. This process provides materiel not available through the traditional supply system, but items that are critical to an immediate operational requirement. This has included items such as armored kits for vehicles and robotic systems for searching dangerous areas.

A final initiative that has been integrated where possible into the reset process is the Army's ongoing recapitalization effort. Recapitalization, which is the rebuild and selected upgrade of currently fielded systems to ensure their operational readiness, aims at improving unit effectiveness and warfighting capability, extending service life, and reducing operating and support costs. Because the need to recapitalize systems is significant and exceeds available resources, the Army has focused on selected units and prioritized systems.

Inserting New Technologies and Capabilities

The Army is making a concerted effort to identify those emerging technologies that have the greatest promise for early incorporation into the modular force. The goal is to exploit opportunities that will enable us to put future technology into the hands of Soldiers today. This will increase readiness and effectiveness of our Army at war today as well as create a current force that will serve as a technological bridge to the future force.

The ongoing modular conversion of Army units is a critical means of making units more efficient and far more capable of exploiting the range of joint capabilities. These units will be more responsive, standardized and flexible, but they also will be essential vehicles for incorporating the new technologies and capabilities that can be applied earlier from the developmental work underway as part of transformation to a future force.

New capabilities will be inserted into the modular BCTs through four planned spin outs of technology that will occur between FY08 and FY14. In addition to the accelerated fielding of selected capabilities through this spin-out process, there will be continued development and fielding of new capabilities associated with systems already well along in the acquisition process.

The FCS program is moving rapidly to bring capabilities to our Soldiers. In FY08, the Army will put unattended ground sensors, intelligent munitions systems, the NLOS-LS and an early version of the network into the EBCT. Upon meeting defined requirements these capabilities will be spun out into the modular force beginning in FY10. This insertion of capabilities will happen at two-year increments based on the readiness of the capabilities for inclusion in the force. Spin Out 2 is programmed to issue components of the FCS-equipped air network layer and a network upgrade to the EBCT in FY10; Spin Out 3 is programmed to issue unmanned ground vehicles to the EBCT in FY12; and by

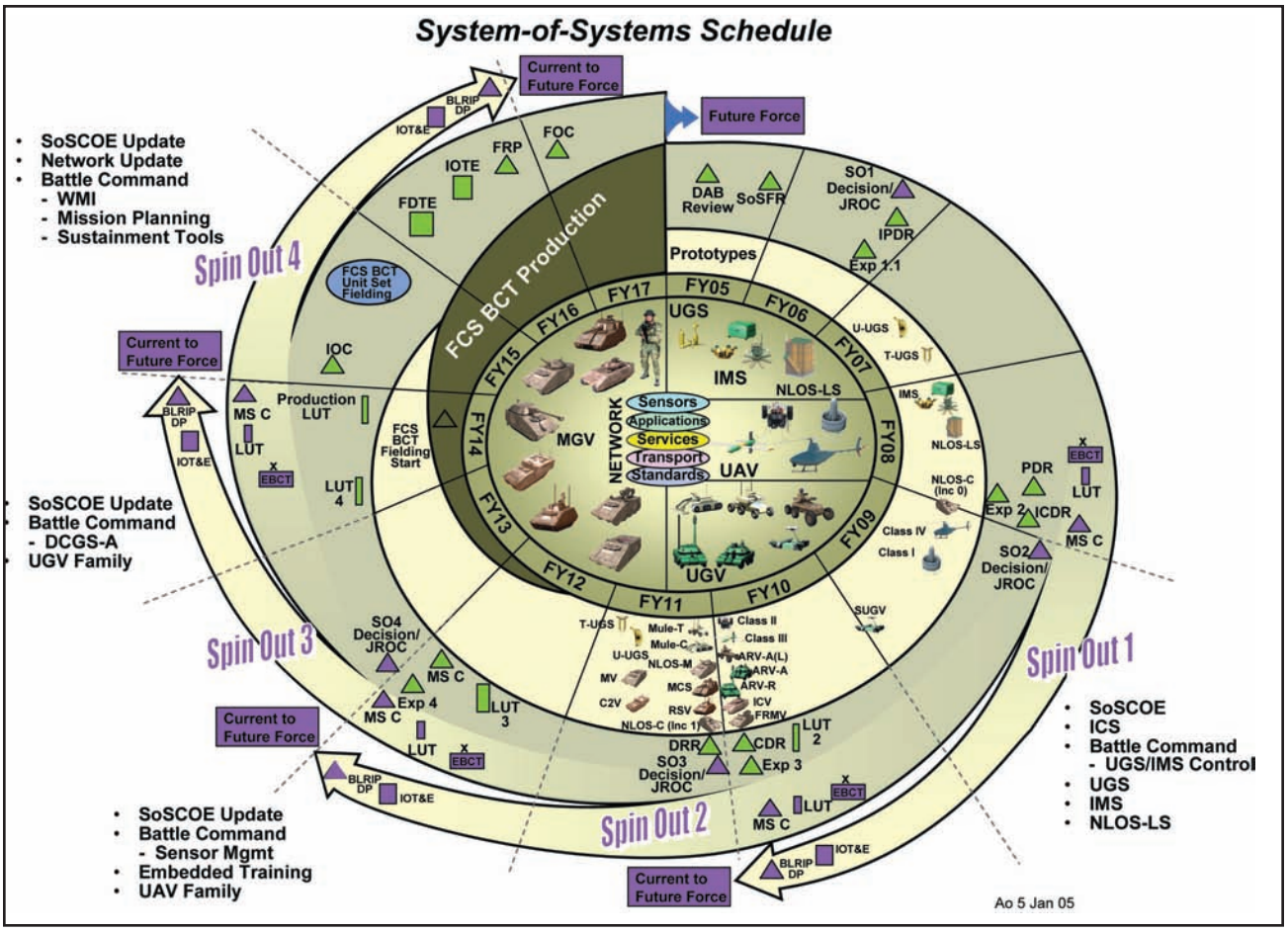


Figure 13. Accelerating FCS Capabilities

Spin Out 4 in FY14 the Army is programmed to field the first FCS (Figure 13).

Future Capabilities—Science and Technology Strategy and Priorities

The goal of the Army Science and Technology (S&T) program is to achieve transformational capabilities that will enable the future force while pursuing opportunities to enhance current force capabilities. The Soldier remains the centerpiece of all Army S&T investments. The S&T community has demonstrated its Soldier focus in responding to demands of current operations in Afghanistan and Iraq by providing selected technologies for immediate limited fielding such as those to counter IEDs. The Future Combat Systems, now in the SDD phase, remains the core of our drive to the Army's future force.

Enhancing the Current Force—S&T Contributions to the Global War on Terrorism

While seeking opportunities to enable the future force, Army S&T is also providing advanced technology to our Soldiers deployed to fight the war on terrorism in three ways. First, Soldiers are benefiting today from technologies that emerged from past investments. Second, we are exploiting transition opportunities by accelerating mature technologies from ongoing S&T efforts. Third, we are leveraging the expertise of our scientists and engineers to develop solutions to unforeseen problems encountered during current opera-

tions. The following are examples of the three approaches:

- **Reaping the return on past investments.** Since the mid-1980s, the Natick Soldier Center has pursued advanced fiber technologies, in partnership with industry, to create lighter weight ballistic protection. This research produced the technologies to develop the outer tactical vest and components for the protective plate inserts that are used by Soldiers deployed worldwide today.

- **Exploiting technologies from current investments.** Radio frequency (RF) jamming technology solutions from investments in our electronic warfare technology program have been incorporated into the family of Warlock systems being used to defeat radio-controlled IEDs today.

- **Leveraging S&T expertise to solve unforeseen problems.** Engineers at the Army Research Laboratory and the Tank-Automotive Research Development Engineering Center have extensive experience in designing armor for the Army's combat vehicles. This team rapidly responded to a critical need by designing and demonstrating add-on armor survivability kits for HMMWVs for enhanced survivability. These kits have been installed on nearly 14,000 HMMWVs currently deployed for the global war on terrorism.

Enabling the Future Force—S&T Contributions to Army Transformation

Science and Technology for the Soldier

Army S&T supports the Soldier as a System (SaaS) concept where the objective is to equip all Soldiers with an integrated modular ensemble based on an open architecture that allows capabilities to be tailored for specific missions. For the future Dismounted Soldier within the FCS-equipped BCTs, Army S&T is developing technology for the Ground Soldier System (GSS). Through working closely with TRADOC and PEO Soldier, S&T efforts will address the Army's future SaaS requirements and ensure linkage to the FCS strategy. SaaS related S&T efforts also address technologies for the Mounted Soldier System (MSS), Air Soldier System (ASS), and Core Soldier System (CSS) ensemble. The S&T program pursues a wide range of technologies to enable Soldier systems. These include:

- Technologies to provide individual Soldiers with platform-like lethality and survivability.

- Ultra-lightweight materials and nanotechnology to design material properties for optimum Soldier applications.

- Lightweight, long-endurance electric power generation and storage.

- Physiological status reporting and medical response technologies.

- S&T efforts in training and leader development include:

  - Training management tools to improve effectiveness of interactive distributed training systems.

  - Methodologies utilizing realistic synthetic experience to accelerate the development of critical thinking and interpersonal communication skills.

Future Combat Systems

The U.S. Army's single largest S&T investment focuses on enabling technologies to field the initial FCS-equipped BCT and follow-on

technology insertions. The key technology investments to enable the FCS system-of-systems concept include:

- Networked battle command systems to enable shared situational awareness and improved decision-making.
- Networked lethality through standoff precision missiles and gun-launched munitions.
- Enhanced survivability through networked lethality, improved sensors to locate and identify threats, signature management, and active and passive protection systems.
- Semiautonomous and autonomous unmanned air and ground systems.
- Low-cost, multi-spectral sensors to find and identify the enemy threats (e.g., mines, booby traps, IEDs).

Force Protection

The Army is committed to providing the best available technologies to protect our Soldiers. The interceptor body armor, electronic countermeasures (Warlock), and lightweight armor kits for our tactical vehicles represent a few of our force protection technologies transitioned to the warfighter. Other examples include:

- Acoustic and radar sensors for detecting and locating the source of rocket, artillery, and mortar fire.
- Infrared technology for countersniper operations, providing warning and locations for counterfire.
- Medical technology to protect Soldiers from endemic diseases and provide rapid treatment to save lives, such as the Chitosan bandage and the Combat Application Tourniquet System, as well as to provide guidelines to protect Soldiers against environmental extremes.

Beyond those technologies already contributing to the current force, we continue to make significant progress in maturing the sensor and kill mechanism technologies to enable active protection systems (APS). APS will significantly increase the survivability of lightweight platforms. We are funding both close-in and standoff protection systems to defeat chemical energy and kinetic energy munitions. In this past year, we have successfully demonstrated the ability to defeat rocket-propelled grenades (RPGs) fired from very close ranges. The technologies successfully defeated RPG threats in two different scenarios: defeating a single RPG fired against a moving vehicle and defeating two RPGs fired nearly simultaneously at a stationary vehicle. We are sustaining investments in these technologies as well as advanced lightweight armors to provide an integrated survivability suite for FCS and other lighter-weight combat systems, approaching protection levels available today only with heavy armor.

We continue to pursue multiple technology solutions to identify and defeat IEDs from standoff ranges. Our work is synchronized across DOD through close coordination with the Joint IED Organization.

Unmanned Systems

The FCS-equipped BCT will be the first Army organization designed to integrate unmanned systems and manned platforms into ground maneuver combat operations. Army S&T is developing technologies for a family of unmanned and robotic capabilities that include unmanned aerial vehicles, unmanned ground vehicles, unattended sensors, and intelligent

munitions. The capabilities of these systems will be modular in design for rapid adaptation to changes in mission needs.

Mobile Wireless Communications

The Army basic research program is establishing a new field of study in network science to perform research that will enable the development of robust, self-organizing, mobile-to-mobile wireless communications networks for the future force. The objective is to provide fundamental advances enabling rapid and survivable communications, on the move, of large quantities of multimedia information (speech, data, graphics, and video) from point to point, and broadcast and multicast over distributed mobile wireless networks for heterogeneous command, control, communications, and intelligence (C3I) systems.

Other S&T Initiatives

The Army's diverse S&T portfolio invests in a range of technologies to provide solutions across a spectrum of desired capabilities beyond those already discussed for the FCS-equipped BCT and Soldier systems. These other initiatives pursue technology solutions to satisfy capability gaps across the entire force. Some of these other S&T initiatives are in areas of enduring and cross-cutting capability needs as listed below:

- Flexible display screens to provide the Soldier with lightweight, compact displays that can be worn rolled up and stored and conform to structures.
- Lightweight, multi-mission equipment packages for unmanned systems.
- Immersive simulations and virtual environment technologies for a Soldier, leader, and unit mission rehearsal and training.
- Embedded prognostics and diagnostics to achieve capabilities for prediction-based/anticipatory logistics that will preempt a variety of logistical requirements and reduce the logistics footprint in theater.
- Area protection from rockets, artillery, and mortars.
- Countermine technology for high operating tempo combat and survivability in stability operations.
- Alternative and variable lethality mechanisms including high-power microwave, high-power lasers, and electromagnetic guns.
- Biotechnology to obtain unprecedented performance and materials.
- Medical technology for self-diagnosing and treating uniform ensembles.
- Genomic, DNA-based vaccines to sustain Soldier and unit combat effectiveness.

Modernization Processes and Enablers

Integral to the overall successful execution of the Army modernization strategy for both the current and the evolving future force capability is the use of some key processes that ensure coordinated and integrated actions. One of these—Unit Set Fielding—is a disciplined fielding approach begun in 2001 that involves the building of unit capability packages and fielding of the package in a single modernization window. This process has been used in fielding SBCTs and will continue to be used in completing the Stryker fieldings and eventually in fielding FCS-equipped BCTs. Another important process that has been employed is software blocking, which is both an acquisition policy and a disciplined process through which the Army achieves and sustains an integrated system-of-systems warfighting

capability. These overarching processes are also complemented by more near-term processes that directly support the achievement of Army readiness for current operational requirements.

Meeting Current Commitments and Preserving Readiness

The Army is fully engaged and committed in the war on terrorism and is simultaneously continuing with the most comprehensive transformation since World War II. It is imperative that a clear focus be maintained on the underlying foundation—providing ready, trained, and equipped Soldiers and units. Maintaining warfighting readiness is the highest priority, and providing our Soldiers with the most modern equipment possible is the continuing objective. To synchronize its efforts to transform while ensuring operational readiness, the Army is making use of the Army Campaign Plan to coordinate and execute all supporting actions. An essential supporting component of the ACP is the Army equipping strategy, which is an integrated plan to use all sources of available equipment to provide balanced fielding of the best equipment available to AC and RC units to achieve timely and progressive operational readiness for all future missions. As previously discussed, the overall readiness model being employed is the ARFORGEN model, and the equipping strategy directly supports its successful implementation.

To facilitate the execution of this equipping strategy and maximize the use of constrained resources, the Army is using a number of important processes and tools that facilitate its execution, including the Army Resourcing Priorities List (ARPL), the Army Requirements and Resourcing Board (AR2B), the Army War Production Board (AWPB), and the Army Equipping Conferences (AEC). Overall, the Army equipping strategy is integral to the Army's readiness for current operations, transformation, and the balance between current and future investments. The underlying key to success, however, will be the continued ability to secure adequate funding to support this strategy and thus provide the best equipment possible for our Soldiers and units.

Army Resourcing Priorities List—Guideline for Decisions

The ARPL is prepared by the Army G-3 and lists in relative priority those units competing for equipment. It serves to inform and guide recommendations for resourcing actions.

Army Requirements and Resourcing Board—Accelerating Solutions for Immediate Requirements

The AR2B is a managerial board established with representation of all key Army staff, major Army commands (MACOMs), and RC representatives to address on a recurring basis (weekly as a rule) requests for materiel originating from the Combatant Commanders. It is a framework in which to identify critical near-term requirements and recommend immediate resourcing solutions. The requirements addressed by this board are directly related to executing the war on terrorism and implementing modular conversion of the Army. It also implements the indispensable reset program which provides for the current and future readiness of Army units.

Army War Production Board—Prioritizing Requirements and Adjustments in Funding to Meet Equipment Shortages

The AWPB is a forum and process established by the Army G-8 and organized in a similar manner to the AR2B. It also meets

frequently (normally biweekly) to review critical equipment shortfalls, focusing efforts on increasing production to mitigate shortfalls. Like the AR2B, it aims at identifying solutions in the current and future budget years that may require resource realignment.

Army Equipping Plan and Conferences—Facilitating the Army Campaign Plan and Modular Conversion

The Army Equipping Conferences are periodic (bi-annual) meetings chaired by the Army G-8's Force Development Directorate with participants from throughout the Army Staff, MACOMs, the National Guard Bureau, and Office of the Army Reserve. This forum has the mission of monitoring and updating the Army's equipping strategy and associated implementing plans in support of the war on terrorism, the implementation of the Army's ARFORGEN readiness model for all components, and the execution of the Army Campaign Plan and the schedule for modular conversion of all Army units. These collaborative Army-wide efforts serve to update fielding plans and also to inform the budget-planning process regarding future acquisition decisions.

Studies and Analysis

Army transformation must successfully structure, organize and equip the Army for the challenges of the 21st century. This is an ambitious goal, and it will not be achieved without well-analyzed investments in both financial and intellectual terms. Managing the transformation process to produce an Army effective in joint warfighting will require continuous analysis to develop materiel solutions that offer the warfighter the most capability for the least dollars. Robust analyses and studies support timely and correct decisions; increase the correspondence of requirements for strategic, operational and tactical conditions; expand technology trade space; permit the effective utilization of past modernization investments; and ensure effective system integration within the Army's system-of-systems framework. Army analytical efforts will provide significant assistance in the materiel development and selection process by balancing risk among schedule, performance and affordability. These analytical efforts will also identify any specific modernization and recapitalization initiatives required to sustain current force superiority with acceptable risk while the Army focuses resources on enabling the future force. The Army's analytical capability ensures we balance cost, technology and warfighting needs in support of the development of an effective modernization program for the current and future forces.

Although the Army uses a variety of analyses and studies to support its decision makers, the tools described below represent the most commonly employed by the G-8 Force Development Directorate (Figure 14). These include capabilities needs analysis (CNA), JCIDS document review using continuous early validation (CEaVa), and quick turn analysis (QTA) using agent-based models.

The TRADOC Futures Center, in coordination with the Combined Arms Center and all TRADOC proponents, conducts an annual future force CNA which informs TRADOC and Department of Army program planning, The Army Plan development, capabilities developments priorities, S&T strategy, and related current force gap analysis. The CNA is a macro-level approach that establishes a baseline of joint and Army required capabilities, assesses the risk to mission success of not performing those required capabilities, identifies and assesses the value of programmed DOTMLPF solutions essential to supporting Army operations, and identifies

capability gaps. The process can also identify capabilities where operational risk can be accepted. Army guidance, such as The Army Plan risk framework, is considered throughout the development of TRADOC recommendations. The CNA process is complementary to the JCIDS process. The CNA process is coordinated with TRADOC headquarters and proponents, the Army Staff, Joint Forces Command (J-9) and Joint Staff J-8. The Army G-8 Force Development adaptation of the CNA will allow us to grade how well we did in closing future force gaps and sustaining required capabilities during each program planning cycle.

Continuous early validation is a documentation review process that will allow us to baseline new system requirements and track changes to those requirements over time. CEaVA will directly support the JCIDS process by allowing action officers to evaluate requirements documentation to ensure regulatory compliance and, most importantly, examine how system requirements change over time and the fiscal impact of changes on the Army Equipping Program Evaluation Group.

Quick turn analysis (QTA): the Army G-8 Force Development Directorate is also exploring the use of agent-based models and simulations to provide QTA on force effectiveness issues that arise during the program-planning process. The intent is to augment senior leader professional military judgment with additional quantitative analysis that increases decision-maker understanding of the impacts on Army force effectiveness of programmatic decisions.

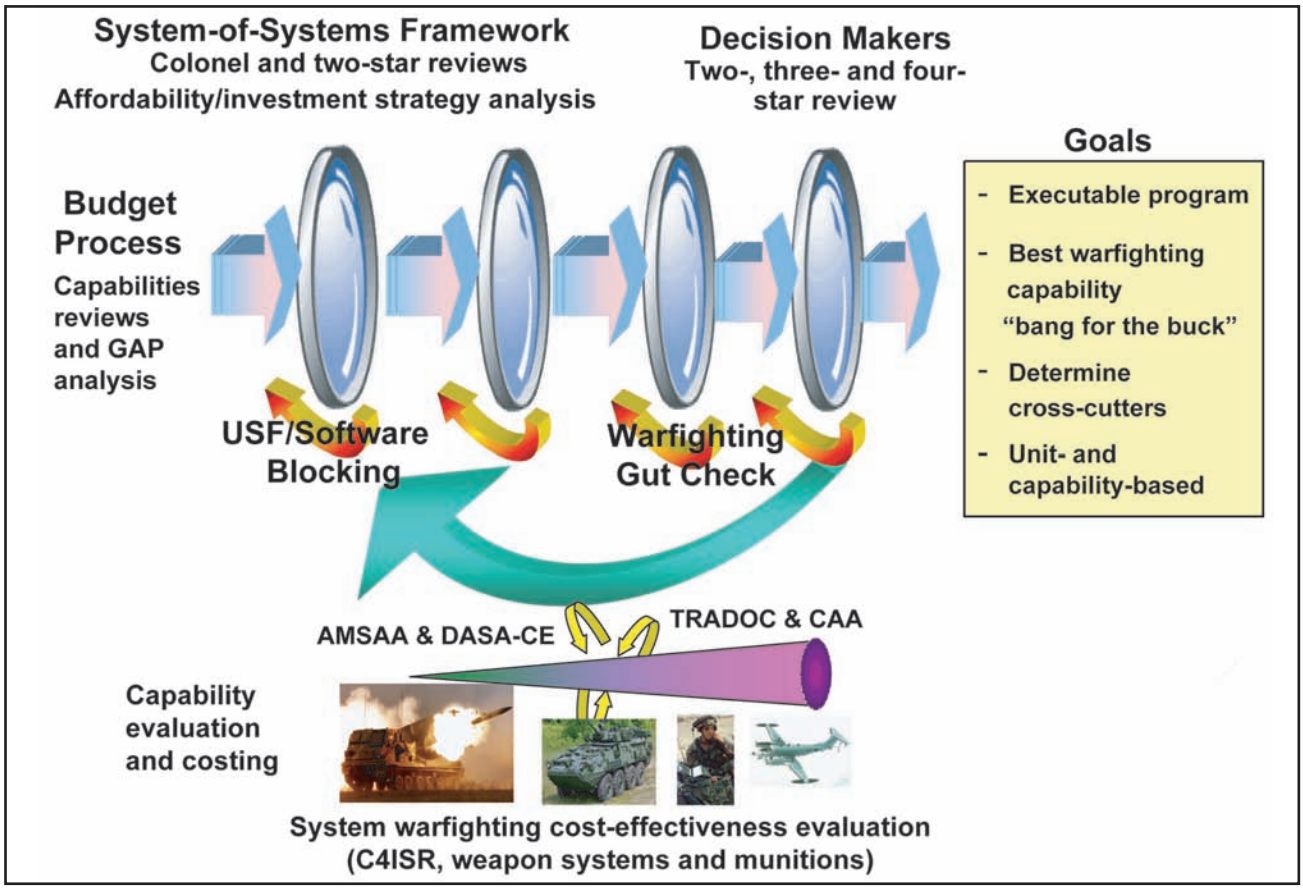


Figure 14. Investment Assessment Process

Modeling and Simulation

Modeling and simulation (M&S) technologies enable the early assessment of current and future force capabilities, analysis of warfighting requirements, support of the future force combined arms training via live-virtual-constructive (LVC) and embedded environments. These technologies will also enhance the ability to critically assess systems as well as system of systems from a variety of functional perspectives.

Simulation and Modeling for Acquisition, Requirements and Training (SMART) is the Army process for effective and efficient application of M&S within Army programs. The SMART process leverages information technologies to improve the processes that enable Army modernization and lead to a fully mission-ready future force. The use of M&S is one means to provide the analytical agility in identifying operational concepts and architectures for future capabilities. The SMART process yields significant benefits that support Army transformation: reduced total ownership costs; reduced time required for concept exploration, concept development, and fielding new or upgraded systems; increased military worth of fielded systems; and concurrent fielding of systems with their system and nonsystem training devices.

The future force requires continued improvement in the fidelity of training systems, including maturing of integrated LVC environments. Actively pursuing embedded training capabilities gives the Army both a built-in mission rehearsal capability and a way to maintain perishable skills for deployed warfighters. Readiness is enhanced though training and mission rehearsals using constructive and virtual simulators and simulations. The integration of LVC environments provides the foundation for the adaptable Joint National Training Capability (JNTC). The Army, through joint exercises and experimentation, will leverage the JNTC environment to test new concepts, doctrine, and tactics across the spectrum of operations.

The testing and evaluation of designs and performance of components, subsystems, and systems are integral to the materiel acquisition process. The test community is a vital part of the SMART process, providing a level of verification, validation and accreditation (VV&A) necessary to ensure the evolving simulations are adequate to support current and future capabilities.

Investments in the development of geospatial data standards, common geospatial terrain, collaborative environments, space representations, test environments, command and control, and complex environment representations are essential. Investments in these areas will enhance Soldier training and combat preparation by providing simulation and training systems integrated directly with operational systems.

M&S reduces the time and resources required for the acquisition and prototyping, production and logistics, training and readiness of military systems and operations. M&S provides responsive feedback for requirements definition and analysis, design synthesis and system verification. M&S also enables cost analysis, enhances system tests and evaluation, and facilitates cost-effective experimentation to gain insights into system capabilities. Expected payoffs from M&S investments are the development of tools and techniques for rapid force modernization, which will effectively prepare Soldiers and units for full-spectrum operations, and technologies for a seamless, integrated LVC simulation environment.

Balancing Risk—PB07 Investment Strategy

The Army's overall modernization and investment strategies, implemented in large part with the effective use of these processes and enablers, are focused on maintaining essential readiness to prevail in the ongoing war on terrorism, sustaining global commitments, and preserving needed investments to transform and field an improved future force. Balancing and reducing risks to the force while accomplishing these objectives requires periodic reassessment and adjustments in The Army Plan in conjunction with the continued full support of resources in both the base budget and supplemental appropriations.

The FY07-11 program continues the momentum of the FY06-11 program in this regard and, while recognizing the need for investment, recognizes that we must first respond to the immediate threat presented to our Soldiers. To meet Combatant Commander requirements, the Army has aggregated equipment from across the force to fully equip those Soldiers deploying into harm's way. As a result, we significantly and temporarily reduced the readiness of many units to make others ready for combat. With help from the President, DOD, and Congress via supplemental appropriations and support for the Army program, we have been provided the means to address many of our equipment shortfalls and readiness requirements, though we still have much to accomplish.

The aggressive and vital reset process that continues is primarily dependent on supplemental funding for its successful implementation. Reset and the Army Modular Force initiative have been supported by OSD and Congress largely through supplemental as well as some budgetary funding. As a result of the DOD commitment made previously in December 2004, the FY07-11 Army Modular Force funding moves to the base program associated with PB07. Specifically for this period, the Army is allocating over $29 billion from the Modular Force reserve toward the total modular conversion of 70 BCTs and associated Support Brigades. The cost of operation-related reset expenses, however, will continue to rely on supplemental funding.

While DOD has provided $25 billion for the modular force over the FY07-11 program period, the Army has also had to identify approximately $14 billion (FY06-11) in efficiencies that can be applied to support this transformation initiative. The Army must prioritize its limited resources to meet the most important requirements while increasing individual and organizational productivity. This ensures that we enhance our operational capability to meet an uncertain international security environment. To accomplish this, the Army must transform the way we do business. To achieve these efficiencies, the Army is reengineering business processes, converting military to civilian spaces, and reducing contract support services and management headquarters.

Additionally, the Army is making adjustment to programs that support LandWarNet, the Army's portion of the Global Information Grid, in order to balance current and future force requirements. The Army is acting now to realign resources from the WIN-T program to higher priority command and control (C2) programs. These resources will address enhanced capabilities to meet current force demands, identified largely from operational lessons learned and global war on terrorism requirements. The enhancements provide enhanced C2-on-the-move, joint common operational picture, and tools for rapid decision-making.

The Army is making substantial investments in the Joint Network Node (JNN) to provide a networking capability to the current force. To leverage this investment, the Army will revise the WIN-T program and align it with FCS time lines while spinning out mature capabilities into the current force as we move forward developing its future capabilities.

Overall, the Army is committed to maintaining essential operational readiness by producing units that can be properly structured, equipped and supported. Building the capabilities needed for tomorrow also requires sufficient and prudent investments that can be sustained over time. The elements of the FY07-11 program are carefully balanced and directed for these purposes.

Conclusion

The Army continues to be committed at war abroad, aiding and protecting our citizens at home, and engaged in an ongoing process of change to become a force more ready and relevant for the joint requirements of the present and future. Transformation is engrained in the Army's plans and operations and has been adapted to take into account the pressing demands on today's forces and the need to provide the best support possible to our Soldiers. New capabilities such as the Stryker brigades are being fielded and used to support current operations. Aggressive reset actions are continuing to restore readiness and improve capabilities of units returning from and preparing for deployments. Major restructuring efforts begun in 2004 are well underway to convert all Army units into modular formations that are better equipped and more ready to support the Joint Force in future operational missions; 2006 marks a high-water point in this undertaking, with 2007 and 2011 representing the completion goals for AC and RC units, respectively. The ultimate objective of all these actions is to field campaign-quality Army forces that are better equipped, trained, manned and structured to provide the joint and expeditionary land forces required to support the nation's defense strategy.

The *2006 Army Modernization Plan* reviews the Army's strategy to build and field combat-capable units that will enhance the capabilities of the current force and develop more improved capabilities for the evolving future force. The major Army transformation and modernization initiatives—modular conversion and the Future Combat Systems program—are now integrally linked in The Army Plan that will incorporate emerging technologies into existing systems and units as soon as practical to provide the best support possible to our Soldiers. Results of transformation efforts have already been seen in the form of new modular formations and new equipment employed in Iraq and apparent in our Soldiers' and leaders' demonstrated adaptability and versatility. Further progress will be increasingly apparent in the coming years.

The *2006 Army Modernization Plan* describes the overall balanced modernization strategy and its various components. While the materiel aspects of modernizing and transforming the Army are a central theme of the *2006 Army Modernization Plan*, it is also critical that modernization be fully coordinated, balanced and synchronized across the critical requirements of doctrine, organizations, training, leadership and education, personnel, and facilities. Respective annexes are devoted to a specific discussion of these essential areas. Above all, people remain central to the success of the Army's mission and transformation, and our Soldiers—imbued with a genuine Warrior Ethos—are the true credentials of the Army—today and tomorrow—just as they have been throughout our nation's history.

With the strong and indispensable support of Congress and OSD, the Army has made significant progress in the ongoing transformation process. In the past, difficult choices and adjustments were required to fulfill more immediate operational needs and preserve essential future investments. It remains imperative to continually reexamine the balance of risks between the current and

future requirements to make best use of our resources. In this regard, the Army is also embarking on a major effort in transforming our business processes to increase efficiency and free financial and personnel resources to better support operational requirements.

The *2006 Army Modernization Plan* is submitted in conjunction with the release to Congress of PB07, which supports an Army at war while continuing to build capabilities for the future force. Specifically, the Army's portion of PB07 submission provides funding for:

- Maintaining emphasis on improving the readiness of the current force by devoting $13.8 billion in FY07-11 to the recapitalization of systems in this force. This includes both rebuild recapitalization—returning system to the original design capabilities—and upgrade recapitalization—rebuilding system and enhancing its capability. Additionally, by supporting efforts in the indispensable reset program to restore readiness for future missions for units involved in recent operations. This latter program is financed primarily through supplemental funding, which is directly tied to operational deployments of forces in Iraq and Afghanistan.

- Allocating over $29 billion from the Army Modular Force reserve toward the total modular conversion of 70 BCTs and associated Support Brigades.

- Implementing a revised equipping strategy that recognizes the important operational role of RC forces and increases the funding significantly over the FYDP to equip ARNG and USAR units to $20.8 billion and $3.8 billion respectively.

- Completing fielding of seven SBCTs by 2008 by providing $2.7 billion.

- Supporting the continued development and spinning out of transformational technologies into current modular units from the FCS program. The previous restructuring in 2004 of the FCS program provided savings of $9 billion for this purpose.

- Leveraging joint, Army component, academic, and industry efforts to take advantage of technology to support the operational Army and the warfighter. In this regard, focuses S&T investment of approximately $9.1 billion in the development of capabilities applicable to the future modular force and with application to current modular force units and systems through the appropriate spin out of technologies and systems.

The Army's priority is focused on sustaining our global commitments by preserving and improving the operational readiness of the current force and effectively supporting our Soldiers deployed and engaged in the ongoing war. In conjunction with this focus, the Army has made great strides in institutionalizing a fundamental restructuring into more modular formations that are increasingly responsive and more capable of executing all missions assigned the Joint Force today and in the future. This latter effort is a fundamental part of the Army's continuing transformation into a more ready and relevant force. This transformation is also built upon the significant development and application of new technologies, including the increased efforts to insert these emerging technologies into existing systems as soon as feasible. These overall modernization efforts include a dynamic assessment of associated risks in order to maintain the correct balance between current and future readiness and capabilities. The Army has achieved a great deal thus far in its pursuit of transformational progress. This

is due in large part to the generous support from Congress and DOD in the form of annual and supplemental appropriations. Continued support and funding will be required, however, and the Army is fully committed to succeed in both the war on terrorism and in the transition to an improved force capable of meeting future needs of the Joint Force. Specifically, to manage risk within acceptable levels, the Army will need:

- Full funding of the Army request in PB07, including exemption from mandatory cuts to the Army budget and program and continued supplemental funding for contingency operations and reset.
- Funding to increase Army capabilities and capacity and support for authorities and programs to assure future access to our RC forces.
- Support and funding to achieve recruiting and retention goals needed to grow our operational forces.
- Funding for the FCS program to enhance the current force and field essential capabilities for the future.
- Full funding to maintain momentum in building the modular force of 70 BCTs and more than 200 Support Brigades and headquarters.
- Full funding for Army installations and support to execute new global-basing posture.
- Support for funding and authorities for Army business transformation initiatives to achieve targeted efficiencies.

This invaluable support will enable continued success in the Call to Duty—for our Soldiers, for the Army, and to the nation.

Annex A: Doctrine

Doctrine and the Army

Doctrine is fundamental principles by which the military forces or elements guide their actions in support of national objectives. It is authoritative but requires judgment in application (*Joint Publication (JP) 1-02, DOD Dictionary of Military and Associated Terms*). It concisely expresses how Army forces contribute to unified action in joint campaigns, major operations, battles and engagements. To facilitate joint interdependence, Army doctrine supports and is consistent with joint doctrine, and describes the Army's approach and contributions to full-spectrum operations on land.

Army operations are doctrine and standards based. Army doctrinal publications—field manuals (FM) and field manuals interim (FMI)—standardize military principles, terms, symbols, and tactics, techniques, and procedures (TTPs). They form the basis for training and the training products that support it. Together, doctrine and training are key to Army readiness.

Doctrine touches all aspects of the Army and creates the initial linkage to joint operations. It facilitates communication among Soldiers no matter where they serve, contributes to a shared professional culture, and serves as the basis for curricula in the Army education system. Army doctrine provides a common language and a common understanding of how Army forces conduct operations. It is rooted in time-tested principles but is forward-looking and adaptable to changing technologies, threats, and missions. Army doctrine is detailed enough to guide operations, yet flexible enough to allow commanders to exercise initiative when dealing with specific tactical and operational situations. To be effective, doctrine must be well known, accurate, acceptable, and commonly understood.

The Army has two capstone manuals, *Field Manual (FM) 1, The Army,* and *FM 3-0, Operation*s. FM 1 contains the Army's vision. FM 3-0 provides the principles for conducting operations, describes the Army's operational-level role of linking tactical operations to strategic aims, and details how Army forces conduct operations in unified action. These two doctrinal publications establish the foundation for employment of land power in joint operations.

Sustaining a Doctrine-based Army

The Army's doctrine of the future must enable core warfighting capabilities while increasing strategic responsiveness and land dominance over an expanded range of mission environments and threats. Our doctrine must encourage the relentless pursuit of the initiative in all military operations. It must address the importance of Army forces and their ability to control land, resources, and people through a sustained presence as part of the Joint Force.

Doctrine must support an Army that will be a hybrid force, transforming from the current to the future force—and embrace both. Organizations, training systems, and materiel are being replaced by new organizations with different training systems and equipment. Throughout the battlespace, Army doctrine must emphasize distributed, simultaneous, network-enabled, interdependent, joint, noncontiguous operations as well as uncon-

ventional threats. These nonlinear operations are described in the *2004 National Military Strategy (NMS), FM 3-0, Operations,* and *JP 3-0, Doctrine for Joint Operations,* and were experienced in recent operations in Afghanistan and Iraq. Doctrine must also address the complete range of potential tactical- and operational-level missions and operating environments—not only open rolling terrain, but also close terrain and the equally challenging, complex urban terrain that are becoming the battlefields of choice for potential adversaries. Most importantly, Army doctrine must be comprehensive and embrace full-spectrum operations, providing a conceptual basis for rapid transitions, without loss of momentum, among all types of Army operations—offensive, defensive, and stability—as part of overseas joint campaigns. As a part of homeland security, the Army conducts civil support, offensive, and defensive operations.

The Army is enhancing its doctrine to address enemies who deliberately avoid predictable operating patterns. It is incorporating lessons learned from ongoing operations to equip Soldiers for today's security environment and to prepare them for tomorrow's. Doctrine cannot predict the precise nature and form of asymmetric engagement; however, it can forecast the kinds of knowledge and organizational qualities necessary for victory. The Army is applying its intellectual and physical resources to refine its doctrine to accomplish that task. Effective doctrine fosters initiative and creative thinking. In so doing, it helps adaptive and flexible leaders make good decisions and stimulate a culture of innovation.

In the near term, the U.S. Army Training and Doctrine Command (TRADOC) will continue to conduct an integrated rewrite of key Army doctrine starting with FM 3-0 to address full-spectrum operations in the joint, interagency, and multinational environments. TRADOC will focus on joint doctrine and warfighting concepts (approved and validated) that maximize lethality and survivability. The U.S. Army Special Operations Command (USASOC) has mirrored TRADOC's doctrine transformation process in some respects. USASOC is preparing operational and organizational (O&O) plans that address Special Forces, Rangers, psychological operations (PSYOP) and civil affairs (CA) doctrine. The U.S. Army John F. Kennedy Special Warfare Center and School (USAJFKSWCS) is also modifying existing doctrine to reflect new capabilities and lessons learned from Operation Enduring Freedom, Operation Iraqi Freedom and the global war on terrorism.

TRADOC continues to ensure that Army doctrine is nested within, rather than simply compatible with, joint and multinational doctrine. These efforts to shape Army doctrine will continue throughout the mid- and far terms.

The Army Doctrine Hierarchy

TRADOC continues to shape Army doctrine hierarchy to match joint doctrine hierarchy as closely as possible. The Army's new FM numbering system, which mirrors the joint, aligns Army doctrine with joint doctrine. The Army's warfighting doctrine is organized in a two-tiered hierarchy that provides a structure for developing and implementing Army doctrinal publications. Tier 1 – Army Doctrine is the highest-level tier, and the majority of the FMs have direct linkage to joint doctrine as indicated by a parallel numbering system. It includes our capstone publications, FM 1 (revised in 2005) and FM 3-0 (scheduled revision in 2006). Approximately 42 other Tier 1 FMs are keystone publications that offer a broad perspective on Army operations in joint campaigns and are instrumental in the proper integration of all other Army doctrine and training publications. Tier 1 doctrine is

intended to provide a solid doctrinal basis for all Army operations and, while this level of doctrine changes on a regular basis, it is not intended to change as rapidly as the Tier 2 manuals. Tier 2 – Doctrine is the second tier that captures the bulk of proponent, lower-level organizational FMs. These FMs are more narrow in scope than Tier 1 FMs, and address subjects in varying levels of detail, depending on the subject, type of force and echelon. There are currently over 550 Tier 2 FMs providing TTPs for specific functions, units, multi-Service operations, and the employment of Soldiers and systems. Tier 2 publications also include numerous reference FMs covering tasks such as providing first aid and conducting physical training or marksmanship.

FMI, an official type of Army doctrinal publication, has accelerated dissemination of urgently needed new doctrine to the field. An FMI can be a Tier 1 or 2 publication. It contains doctrine that is urgently needed by the operational forces. Proponents prepare FMIs to meet immediate doctrinal needs. They are approved by the proponent and authenticated by Headquarters, Department of the Army (HQDA). FMIs expire after two years unless superseded by an FM, or when rescinded. The publishing of FMIs is tightly controlled to preclude proliferation of publications and is considered the exception rather than the rule for distributing Army doctrine.

Doctrine to Support a Nation at War and a Transforming Army

The Army is transforming to a campaign-quality force with joint and expeditionary capabilities to provide relevant and ready land power to Combatant Commanders and the Joint Force. At the same time, it must sustain operational support to forces fighting the global war on terrorism. As Army organizations transform, Army doctrine is transforming to allow Soldiers and leaders to make maximum use of the capabilities of the new organizations and equipment. Our doctrine must remain current and relevant as we transform.

Our Army, as a part of a joint campaign, is serving a nation that is at war. Several of the Army's Tier 2 warfighting publications have required rapid adjustments to standardize how we fight an enemy that uses unconventional means and that represents an asymmetric threat. To rapidly gather operational lessons learned, selected Army doctrine proponents and the Center for Army Lessons Learned (CALL) deploy teams to theater. These teams capture lessons learned and package the information for incorporation into doctrinal publications and/or CALL publications to shape and drive training for deploying forces. Some publications developed or revised as a result of the global war on terrorism lessons learned cover convoy operations; detainee operations; improvised explosive device defeat; cordon and search; unexploded ordnance; infantry tactics; counterinsurgency operations; tank gunnery; urban intelligence; command and control of detainee operations; and the operations process and military police operations.

Specific Army doctrine priorities developed by the Commanding General, Combined Arms Center, and approved by the TRADOC Commander sets the course for current and future doctrine efforts in support of the modular Army. One of the top priorities includes Army input/writing joint doctrine, specifically *JP 3-0, Doctrine for Joint Operations*. The Army must ensure that the development of JP 3-0 accurately reflects the requirements of land dominate operations. The Army's top capstone manual *FM 1, The Army,* was published in June 2005. It establishes the Army's

operational concept and fundamental principles for employing land power in support of the National Security, National Defense, and National Military Strategies. FM 3-0 is under parallel development with JP 3-0 and will address how our transforming Army will conduct land operations as part of joint campaigns. It will codify the Army's revised warfighting operational concept stated in FM 1 and expand on the fundamental principles of combined arms, joint interdependence, mission command, and full-spectrum operations. The goal is to publish FM 3-0 by third quarter, FY06, which will be within six months of JP 3-0's release. Simultaneously, the most important keystone field manuals will be revised. These high-priority field manuals will be published in two waves. FM 2-0 (Intelligence), FM 4-0 (Logistics), FM 5-0 (Planning), and FM 6-0 (Command and Control) are scheduled for first quarter, FY07. Other high-priority field manuals—among them FM 3-07 (Stability Operations) and FM 3-13 (Information Operations)—will be completed in third quarter, FY07.

The centerpiece of the modular Army is the Brigade Combat Team (BCT)—Heavy Brigade Combat Team (HBCT), Infantry Brigade Combat Team (IBCT), and the Stryker Brigade Combat Team (SBCT), all of which are currently being reorganized, equipped and deployed. Simultaneously, Army command and control headquarters (corps and divisions) are being restructured into modular divisions and corps. As the Army transforms to these modular units, so must the Army doctrine transform that states how to employ and fight these forces. Doctrine that supports the tactical employment of the SBCT and HBCT has been published and distributed to the field. The majority of these publications are FMIs, which were published in less than a year and have a shelf life of two years unless rescinded or revised/superseded. The intent is to continue to research and analyze modular force operations to eventually publish these temporary manuals as standard field manuals. The following doctrinal publications have been published in direct support of the modular force:

- *FMI 3-90.6, HBCT*
- *FMI 3-90.61, Brigade Troops Battalion Operations*
- *FMI 3-04.101, Aviation Brigade Organization*
- *FMI 3-09.42, HBCT Fires and Effects Operations*
- *FMI 3-20.96, HBCT Reconnaissance Squadron*
- *FMI 3-90.5, HBCT Combined Arms Battalion*
- *FMI 4-90.1, HBCT Logistics*
- *FMI 2-91.4, Intelligence Support to Operations In the Urban Environment*

The supporting IBCT doctrine is being developed and should be published and distributed in FY06.

Currently, TRADOC and the Army staff are studying, analyzing and making decisions on the organizational restructure of the Army's command and control headquarters as modular divisions and corps. The Army service component command, corps and division operational doctrine are being revised to describe and explain to the combatant and Joint Force commanders how these forces are organized and employed and how they contribute to land dominance in joint operations.

The Future Combat Systems (FCS)-equipped BCT is the Army's primary future force initiative. Through the Capabilities Integration and Development System (CIDS)/Joint Capabilities Integration Development System (JCIDS) process and supporting doctrine, organization, training, materiel, leader development and education, personnel, and facilities (DOTMLPF) analysis, TRADOC identified a series of doctrinal publications required to support experimentation, testing, and fielding of the Army's FCS-equipped BCT. These publications, when drafted, will be used as an initial foundation to support evaluation, training, employment, warfighting, and identification of necessary changes for the FCS-equipped BCT prior to production. Currently, the draft doctrinal publications identified are:

- *FMI 3-90.9, FCS Operations*
- *FMI 3-90.8, FCS Maneuver*
- *FMI 4-93.9, FCS Maneuver Sustainment Operations*
- *FMI 2-19.1, FCS Intelligence, Surveillance, and Reconnaissance*
- *FMI 3-09.45, FCS Fires and Effects*
- *FMI 3-34.3, FCS Maneuver Support Operations*
- *FMI 3-04.154, FCS Manned/Unmanned Teaming Operations*
- *FMI 3-20.82, FCS Gunnery and Marksmanship Training*
- *FMI 6-0.1, FCS Battle Command*
- *FMI 7-4, FCS Embedded Training*

TRADOC and non-TRADOC proponents are analyzing current and emerging modular force doctrine (at all echelons) to capture the spin out of transformational technologies into the current modular units from the FCS program. This is to ensure that the employment of these systems is doctrinally sound and standardized throughout the Army in order to maximize the capability of the Joint Force.

The Doctrine Literature Master Plan (DLMP) and Modernization

The DLMP is an Army tool used to manage and forecast resources for the life cycle of all doctrinal publications. Its primary purpose is to provide a snapshot on the status/readiness of Army doctrinal publications and to forecast resources for doctrine development requirements. It lists all Army, joint, multi-Service, and multinational doctrinal publications for which TRADOC and non-TRADOC doctrine agencies are the proponents and/or primary review authorities/technical review authorities. It includes current publications, new developments, revisions, and proposed consolidations. Because doctrine development is decentralized across Army agencies, the DLMP establishes planning standards and consistency, and serves to institutionalize a methodology used to determine and articulate doctrine resource requirements for the execution, budget, and program planning years.

Doctrine does not have a shelf life, but for programming and budgeting purposes it is forecast to be revised at a minimum every five years. Proponents are required to assess their publications for currency and relevancy every 18 months and record the status in the DLMP. Doctrine proponents are required to update doctrine as soon as it becomes obsolete. If proponents determine that a publication requires an out-of-cycle revision, they take the necessary actions to resource the requirement through the unfinanced resource requirement route.

Object-Based Publishing (OBP) of Doctrine

Technology and military publishing standards have evolved to allow for a more logical and efficient way to capture, manipulate, and exchange doctrine information. By 2010, TRADOC will build a repository that enables access to relevant information regarding past, present, and projected analytic efforts; create a single mechanism providing ease of query for operational and institutional users to search and leverage available Army, Department of Defense, industry and academic analytic knowledge, thereby supporting collaborative information exchange.

Future of the Army Doctrine and Doctrinal Process

Doctrine has served the warfighter well over the years but must evolve to support a transforming Army and in light of a changing enemy and environment. As the Army transforms toward the future force, the methods of producing and disseminating doctrine will change to meet the new requirements of this fighting force. The basic premise of the doctrine development program for the future is not in the development of new architectures or expenditures, but in enhancing our capabilities to leverage and sort operational information through improved collaboration using structured professional forums, otherwise knows as "communities of practices." A structured professional forum is a group of people sharing lessons, concerns, passions, and solutions about topics, and who deepen their knowledge and expertise through frequent interaction. Professional associations, software developers, and skilled craft guilds are examples. Establishing structured professional forums is an effective way to handle complex problems and to share knowledge outside the traditional structural boundaries.

The Army doctrine development process can harness the use of online structured professional forums through a network-centric knowledge system to streamline the incorporation of lessons learned and development and fielding of new and updated doctrine as stand-alone topics. In a time when doctrine needs to be responsive to Soldier inquiries, structured professional forums will play an important role in quickly determining and distributing the requisite information to help drive doctrinal requirements. Our new process must balance our need to maintain enduring, common, contextual doctrine that supports the development of flexible, adaptive leaders, yet allow for rapid integration and validation of lessons learned and updating of specific TTP necessary to support full-spectrum units in the train-alert-deploy construct.

The future doctrine process will leverage history and experiences with the latest web-based technologies to create, process, authenticate, and distribute doctrine at all levels. The new doctrine storage processes and retrieval methods will be key factors in Soldier development, and will change how Soldiers access and use knowledge as part of the future force. Object-based doctrine, along with knowledge management, will greatly enhance our ability to conduct rapid updates of related doctrine and training materials. Used in concert with structured professional forums, it will provide the ability to capture input from any Soldier, anywhere and anytime, and support the creation of an enterprise-wide knowledge system that can facilitate the rapid reception, validation, and sharing of key operational lessons throughout the Army.

Conclusion

The Army's doctrine must enable core warfighting capabilities while increasing strategic responsiveness and land dominance over

an expanded range of mission environments and threats. It must clearly articulate the capabilities of the Army land component in joint operations. The capstone (FM 3-0) and most important keystone field manuals are being revised and will be republished beginning in 2006. Doctrine to meet the near-term requirements of forces in combat is being developed and disseminated faster than ever before. Efforts to shape Army doctrine will continue throughout the mid- and far terms. Through the midterm, TRADOC will incorporate new tools and procedures that will make doctrine development more agile and responsive, while continuing to reflect the best available thought on the art and science of full-spectrum operations. In the far term, incorporation of tools and procedures will continue as new technology becomes available. These tools and procedures will speed the development and dissemination of future force doctrine and help Soldiers rapidly access both the principles and the TTP they need to accomplish their missions.

Annex B: Organizations

Overview

Strategic guidance and operational experience confirm that the nation requires expeditionary forces capable of sustained operations. As elusive and adaptive enemies seek refuge in remote and inaccessible areas, the norm will be short-notice operations, austere operational environments and incomplete information. Army forces will be required to fight on arrival throughout the battlespace and to dominate potential adversaries for the duration of a campaign. Campaigns are undertaken to bring about fundamental, favorable change in a crisis region and create enduring results. Many campaigns will likely entail lengthy periods of both major combat and stability operations. This requires the Army to sustain decisive operations for as long as necessary, adapting to changes as required. At the same time, we must reconcile expeditionary agility and responsiveness with staying power, durability and adaptability.

The Army's ability to successfully provide the joint force rapid expeditionary capabilities and to sustain land campaigns across the spectrum of conflict requires seamless active component (AC) and reserve component (RC) contributions. The AC will provide responsive, agile and expeditionary forces that respond within the first 30 days of an expeditionary operation. The RC, particularly the Army National Guard (ARNG), will provide the bulk of homeland defense support. Both AC and RC forces will provide depth through follow-on forces that provide the Joint Force commander campaign-quality capabilities necessary to conduct sustained and decisive land operations.

Fiscal Year 2006 (FY06) reflects the high-water mark of Army restructuring and conversion to create modular formations and obtain the correct mix of active and reserve force structure. Following FY06 efforts, the Army's operating force of FY07 will be comprised of approximately 75 percent of Brigade Combat Teams (BCTs), operational headquarters and Support Brigades. Key generating force organizations within the Army's institutional base will continue to evolve to support a brigade-centric Army operating under an Army Force Generation (ARFORGEN) process.

In FY06, the authorized ARNG end strength will hold constant at 350,000 and the U.S. Army Reserve (USAR) at 205,000. Under the Secretary of the Army's End Strength Plan, the AC will grow to 512,400 by the end of FY07. Within the AC, the operating force will grow from 315,000 to 355,000. The Army will shift personnel spaces into the operating force by reducing AC transient, trainee, holdee and student (TTHS) and generating force authorizations and gaining efficiencies from restationing activities, military-to-civilian conversions and business process adaptation. The Army Plan will ultimately reduce AC end strength to 482,400 by FY11. (Figure B-1).

Strategic Planning, Modular Support Forces Analysis (MSFA) and Total Army Analysis (TAA)

The force-planning construct modeled in Total Army Analysis (TAA) remains focused on the 1-4-2-1 strategy of protect the homeland ("1"), deter forward in four critical regions ("4"), swiftly defeat adversaries in two near-simultaneous conflicts ("2"), while preserving for the President the option of decisively defeat-

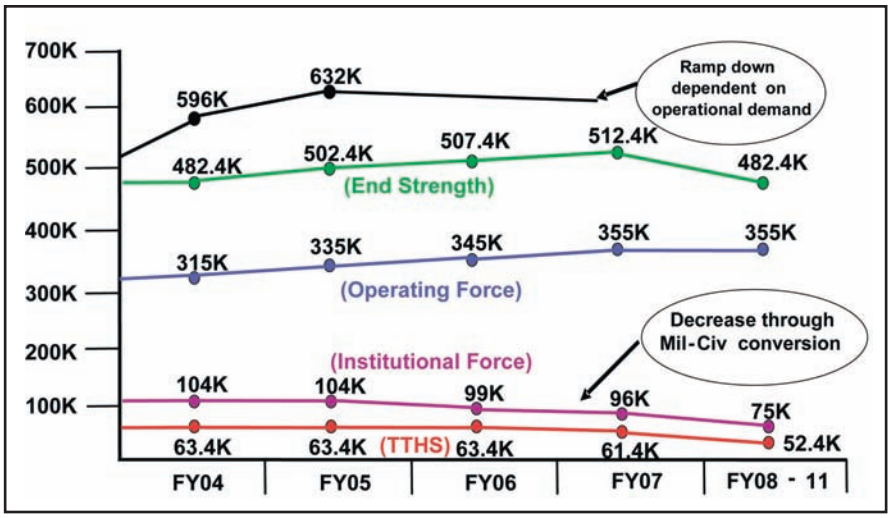


Figure B-1. AC End Strength Plan

ing one of those adversaries ("1"). The Army shaped the conditions of their TAA process implementing a Modular Support Forces Analysis (MSFA) that yielded the Support Brigades required to sustain the brigade-centric Army. MSFA results informed the TAA process that in turn addressed the requirement to maintain sufficient force generation capability and the need for rotational forces to support small-scale contingency operations.

While maintaining the capabilities necessary to meet operational demands, TAA06-11 provided the basis for meeting the transformation objectives of modular conversion and the AC/RC force balance objectives. To meet these objectives, a temporary strength increase of 30,000 within the AC is projected through the end of FY09. The mix of force structure allowance within both the ARNG and USAR will change as TTHS accounts are established in both components by the end of FY08.

To ensure timely force structure programming to meet operational demands and transformation objectives, TAA is undergoing a change in process and time line. During the fall of 2004, the Army conducted a "mini-TAA" to identify force structure needed to support the projected brigade-centric organizations. Beginning in January 2005, the Army initiated TAA08-13 to address all aspects of modular conversion, AC/RC balance, and rotational force requirements in preparation for the 2005 Quadrennial Defense Review (QDR 05) and the FY08-13 Plan. By adjusting to an annual force analysis cycle, TAA will ensure the proper mix of force capabilities to ensure maximum support to the Combatant Commanders. TAA 08-13 will culminate in February 2006 with the release of the Army Structure Message. Figure B-2 depicts the programmed FY06 Army Military Force Structure.

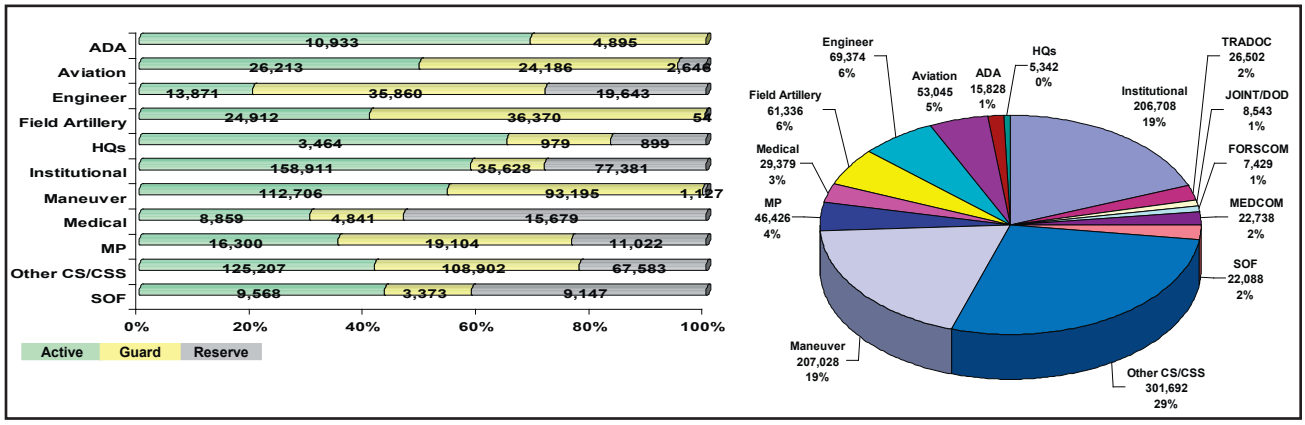


Figure B-2. AC and RC Force Structure in Fiscal Year 2006

Army Transformation

Transformation of the Army occurs across the operating force (those units that deploy to conduct operations in support of Joint Force commander requirements) and the generating force (that portion of the Army that exists to carry out Title 10 functions required to provide relevant and ready land power capabilities to Joint Force commanders). The operating and generating force distinctions tend to blur in practice, but they provide useful constructs for capability development. Within the Army Campaign Plan, the Army differentiates transformation activities across the complementary groupings of organizations. Figure B-3 provides a construct for adaptation across the operating and generating forces.

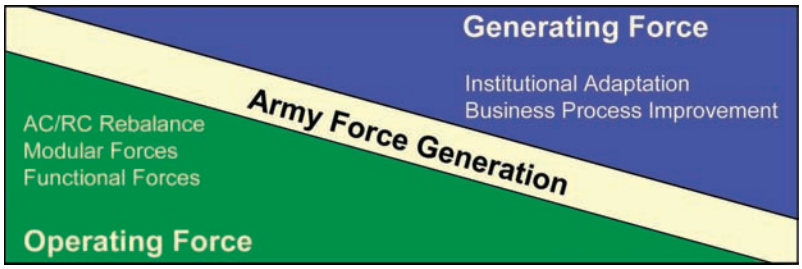


Figure B-3. Near-term and Midterm Organizational Transformation

Operating Force: AC/RC Rebalancing

The AC/RC rebalance initiative is an incremental process that has evolved over time to hasten the transformation of a post cold war Army into a force capable of efficiently and effectively addressing the warfighting requirements posed by a global war on terrorism. The total impact of this initiative is the adjustment of more than 100,000 spaces over program years 2004-2009.

The Army has addressed the AC/RC Rebalance initiative in three phases, which include:

1. **Phase 1** – Total Army Analysis 2004-2009, which constitutes the initial adjustment to the force based on the realties of a post 9-11 security posture. Phase 1 affected approximately 25,000 of force structure across all three components with the principal goal of increasing the Army's capabilities in military police, military intelligence, Special Forces, chemical, civil affairs and psychological operations units. Much of this 25,000 of structure change is movement of capabilities from the RC the AC in order to address high-demand, low-density requirements. New space growth in the AC is offset by a corresponding reduction in TDA structure.

2. **Phase 2** – Secretary of Defense (SECDEF) guidance from the 9 July 2003 memorandum constituted the second phase of the rebalancing effort. This guidance directed the need to decrease the necessity for involuntary mobilization of the RC in the first 15 days of a rapid response operation. The Army rebalanced almost 10,000 of structure to reduce RC mobilization and eliminate demand for RC units in the initial phase of deployment.

3. **Phase 3** – The Chief of Staff, Army Focus Area Seven directive further expanded on rebalancing efforts. This phase adjusted approximately 91,000 structure in FY06-09 by eliminating the Authorized Level of Organization (ALO), the reduction of high-demand, low-density units in the AC, and establishment of TTHS accounts in the RC.

The following chart provides a summary of each of the three phases by fiscal year.

The AC/RC Rebalance Initiative is on track. The Army continues to review its force balance and make adjustments where necessary

Initiative		FY04	FY05	FY06	FY07	FY08	FY09	Total
Phase 1	Restructure	3,706	10,801	4,355	1,163	2,607	1,542	24,799
Phase 2	RC Rotation	0	2,162	984	1,054	148	0	4,348
	SDTE	761	2,184	2,623	0	0	0	5,568
Phase 3	ALO & HD	0	1,696	3,346	60	1,026	0	6,128
	TTHS	0	9,400	45,743	15,547	12,710	0	83,400
	Unit Buys	0	0	0	632	349	0	981
Grand Total		*4,467*	*26,243*	*57,051*	*18,456*	*16,840*	*1,542*	*125,224*

in order to optimize the use of its available manpower and equitably distribute deployment burdens. The Army's structure balance is vetted through several processes to include TAA and ARFORGEN.

Many of the actions described above have been affected by the current operating tempo (OPTEMPO). For instance, units scheduled for inactivation as a result of planned Phase 3 actions in support of the establishment of TTHS like accounts in the RC have been delayed based on Combatant Commander requirements. Upon completion of scheduled deployments, units will complete their inactivation as scheduled.

The Force Structure Data Extract is shown in the chart below.

Operating Force: Modular Forces

We are aggressively reshaping the force to become an Army of campaign quality with joint and expeditionary capabilities—transforming to win the war today while simultaneously positioning ourselves for future challenges. Army general-purpose forces are proving to be the primary military instrument to create favorable and enduring security conditions in crisis regions. However, strategic and operational requirements compel the Army to reconcile expeditionary agility and responsiveness with staying power, durability and adaptability. Not only must the Army sustain decisive operations for as long as necessary to allow for political favorable resolution, Army forces must be ready to adapt to changes across the range of military operations and against learning and adaptive adversaries. To maximize force effectiveness, the Army is reorganizing to a modular, brigade-based force to achieve three primary goals:

- Increase the number of available BCTs to meet operational commitments while maintaining combat effectiveness that is equal or better than that of previous divisional BCTs.
- Create combat and support formations of common organizational designs that can be tailored to meet the varied demands of the Combatant Commanders—reducing joint planning and execution complexities.
- Redesign organizations to perform as integral parts of the Joint Force—making them more effective across the range of military operations and enhancing their ability to contribute to joint, interagency and multinational efforts.

Within its modular conversion strategy, the Army migrates capabilities that were previously found at higher echelons to the BCTs. Further supporting this effort, the Army is

Budget Data

Program*	FY05	FY06	FY07	FY08	FY09	FY05-09
Rebalance Forces	$43.6	$59.7	$40.9	$0.0	$0.0	$144.2
Address HD	$28.1	$4.1	$4.1	$0.8	$0.0	$37.1
Total	$71.7	$63.8	$45.0	$0.8	$0.0	$181.3

*Based on Department of the Army PCP Submission to OSD for FY05-09

Force Structure Data Extract

Capability	FY04			FY11			Delta			
	AC	RC	Total	AC	RC	Total	AC	RC	Total	Change
Field Artillery	28,135	47,515	75,650	22,814	24,880	47,694	(5,321)	(22,635)	(27,956)	-37%
Air Defense	10,516	9,076	19,592	10,795	3,030	13,825	279	(6,046)	(5,767)	-29%
Engineer	17,359	61,515	78,874	21,794	46,728	68,522	4,435	(14,787)	(10,352)	-13%
Armor	24,669	28,836	53,505	19,419	12,905	32,324	(5,250)	(15,931)	(21,181)	-40%
Military Police	13,789	26,011	39,800	18,252	37,849	56,101	4,463	11,838	16,301	41%
Aviation	23,363	20,937	44,300	27,765	26,927	54,692	4,402	5,990	10,392	23%
Infantry	51,035	56,450	107,485	65,451	52,674	118,125	14,416	(3,776)	10,640	10%
Civil Affairs	351	5,784	6,135	692	6,248	6,940	341	464	805	13%
PSYOP	1,211	2,234	3,445	1,447	2,569	4,016	236	335	571	17%
Chemical	3,156	8,861	12,017	4,035	11,694	15,729	879	2,833	3,712	31%

converting most other operating force formations into modular, capabilities-based units with greater capacities for integration into tailorable and strategically responsive force capability packages. Modular operational headquarters will provide robust command and control and will be better able to serve as joint headquarters. Modular Support Brigades and combat support (CS)/combat service support (CSS) units with reduced logistics footprints, enhanced battlespace awareness, and improved sense-and-respond logistics capabilities will improve joint force responsiveness, versatility and sustainability.

This modular conversion effort is the greatest restructuring of Army forces since World War II, and it affects nearly every organization in our inventory. Most combat formations and headquarters will be complete by 2008; theater Army headquarters will be completed by 2009, and Support Brigades will be completed by 2011 (Figure B-4).

	AC	ARNG	USAR
Force Application			
Brigade Combat Team (BCT) *Total*	42 *	28 *	
Heavy Brigade Combat Team (HBCT)	18	6	
Stryker Brigade Combat Team (SBCT)	6	1	
Infantry Brigade Combat Team (IBCT)	17	21	
Armored Cavalry Regiment (ACR)	1		
Special Forces Group (Airborne) (SFG(A))	5	2	
Civil Affairs Brigades (CA)	1		8
Psychological Operations Groups (PSYOP)	1		2
Ranger Regiment	1		
Combat Aviation Brigade (CAB) *Total*	11	7	
CAB (Heavy)	6	2	
CAB (Medium)	4		
CAB (Light)	1		
CAB (Air Expeditionary)		5	
Theater Aviation Brigade	1	5	1
Special Operations Aviation Regiment (SOAR)	1		
Fires Brigade	6 *	7 *	
Information Operations Group	———	TBD	———
Command and Control			
Army Service Component Commands	9 **		
Corps	3		
Division	10	8	
Signal Brigade	7	2	1

	AC	ARNG	USAR
Protection			
Combat Support Brigade (Maneuver Enhancement) (CSB(ME))	3	14 *	2
Engineer Brigade (EN)	4	8 *	4
Military Police Brigade and Criminal Investigation Detachments (MP/CID)	4	2	
Internment/Resettlement Brigade (I/R)		1	3
Air Defense Brigade	4	2	
Chemical Brigade (NBC)	1 ***	1	1
Criminal Investigation Detachment (CID)	2		
National Missile Defense Brigade (NMD)		1	
Focused Logistics			
Sustainment Brigade (SUST)	13	9	8
Ordnance Group (Explosive Ordnance Disposal (EOD))	2	1	
Quartermaster Group (Petroleum, Oil, and Lubricants (POL))	1		3
Regional Support Groups		17	25
Medical Support Command	4		10
Battlespace Awareness			
Intelligence Brigade (MI)	8	1	
Electronic Warfare Group (EW)	2		
Battlefield Surveillance Brigade (BFSB)	3	2	
Miscellaneous ****			
Financial Management Center (FMC)	2		5
Space Brigade	1		

* Structure decisions still in progress as of 25 FEB 06.

** 5 Theater Army Headquarters
3 Functional ASCCs
1 Non-modular Army Headquarters (EUSA)

*** Does not include Homeland Defense capabilities

**** Training units and other Soldier support functions to be captured in Army Campaign Plan

Figure B-4. Army Force Structure Baseline

Though quickly implemented in response to the global war on terrorism, these organizational changes are a well-measured response. Organization designs are consistent with concepts and methods of operation articulated within the Army's Future Force Capstone Concept, but these designs are tempered by the technological capabilities that are reasonably available within the near term. Standardized and enhanced battle command capabilities that improve joint interdependency and situational awareness enable this change. Networked battle command, improved intelligence, and robust target acquisition systems enable our Soldiers to fight for and maintain information superiority with faster speeds of command, enhanced self-synchronization between units and dramatically improved combat effectiveness.

Maneuver Brigades. The decisive effort of Army transformation is the creation of modular, combined arms maneuver BCTs. As part of this transformation, the Army migrates capabilities that were previously found at divisions and corps to the brigade—the building block of combat forces in the future force. Each type of brigade will be of standard configuration and organization. Further, these brigades will gain improved force packaging, sustainability, battle command and situational awareness while retaining the same lethality as the larger, task-organized BCTs. These units will serve as the foundation for a land force that is balanced and postured for rapid deployment and sustained operations worldwide.

The three BCT designs are the Heavy (HBCT), Infantry (IBCT) and Stryker (SBCT). These BCTs are similar in overall configuration. The main difference is that the SBCT has three maneuver battalions instead of two as in the HBCT and IBCT. The HBCT has two combined arms battalions, an armed reconnaissance squadron, a fires battalion, a support battalion and a brigade special troops battalion. The IBCT has two infantry battalions, a reconnaissance, surveillance and target acquisition (RSTA) squadron, a fires battalion, a support battalion and a brigade special troops battalion. The SBCT has three infantry battalions, a reconnaissance, surveillance and target acquisition RSTA squadron, a fires battalion, engineer, signal, MI and anti-armor companies.

- The brigade special troops battalion provides the command posts, liaisons, military intelligence and signal support for the HBCT and IBCT. The IBCT also has an engineer company.
- The armed reconnaissance squadron (HBCT) and RSTA squadrons (IBCT and SBCT) conduct reconnaissance, surveillance and target acquisition for the BCT.
- Maneuver battalions. The combined arms battalions in the HBCT consist of two infantry, two armor and one engineer companies. The infantry battalions in the IBCT consist of three infantry and one weapons companies. The infantry battalions in the SBCT have three infantry companies.
- The fires battalion consists of two artillery batteries in the HBCT and IBCT. The SBCT has three artillery batteries. All have target acquisition and counter-mortar radar systems.
- The support battalion provides additional transportation, distribution and maintenance functions that cannot be covered by the forward support companies. It also directly supports the brigade special troops battalion.

As a hedge against future uncertainty, the Army is retaining the armored cavalry regiment configuration. In major combat

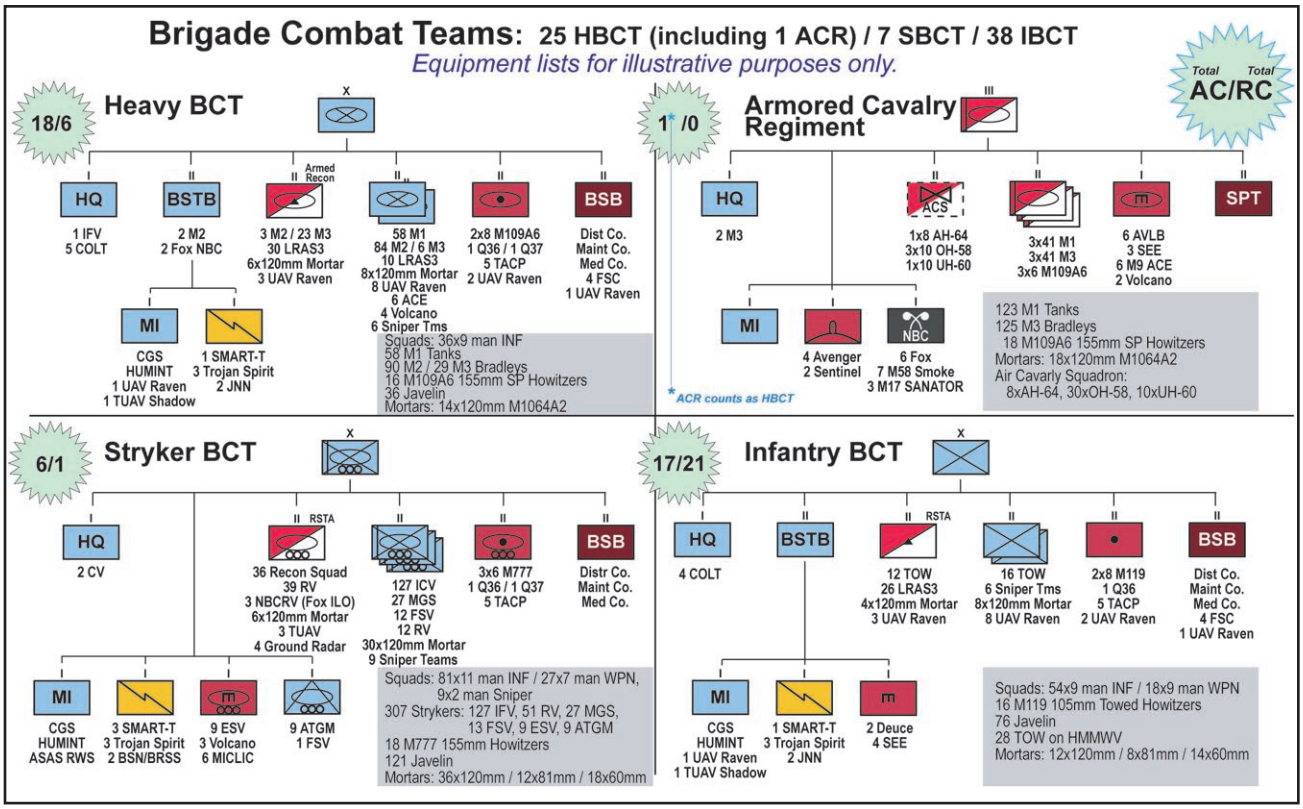


Figure B-5. Brigade Combat Teams

operations, the joint force land component commander (JFLCC) should accurately see, understand and shape the enemy force before committing brigades to fight battles and engagements. Technical sensors cannot provide accurate information about enemy forces in complex environments to meet the JFLCC commander's critical information requirements. The armored cavalry regiment (ACR) has unique capabilities to effectively and efficiently meet these operational-level requirements for reconnaissance, security, offensive and defensive operations.

Operational Headquarters. In 2003, the Army articulated a plan to replace the existing structure of divisions, corps and echelons above corps with only two command echelons. Operational experience and analysis led us to reevaluate this plan and retain the corps as a 3-star level operational headquarters. Though the Army is retaining this echelon, it has significantly increased the capabilities of these headquarters and units to improve strategic flexibility and support to the Joint Force commander. Each theater Army will have the capability to be both Army Service Component Command (ASCC) and JFLCC to support geographic Combatant Commanders. This was not the case before modular conversions. The corps and division have the Army structure and manning necessary to serve as a joint task force (JTF) or JFLCC. This change to their organization reduces the risk of last minute assignment of staff personnel necessary for augmentation, preserving readiness across the force and enabling the Army to sustain command and control through periods of continuous operations. As a result of these increased capabilities, the Army can designate either a corps or a division headquarters to serve as a JTF or JFLCC based on the nature of the mission. Any BCT or Support Brigade may be assigned

to any corps or division without extensive task organization or augmentation. This improves the strategic flexibility to provide exactly the right capabilities to support the Joint Force commander. Each type of headquarters will employ separable, deployable command posts for rapid response and entry, and these headquarters will be designed for network-enabled operation.

Corps and Divisions. The corps and divisions will be reorganized into headquarters with deployable command posts. The division will remain the Army's primary operational-level headquarters, and the corps will generally be assigned against intermediate headquarters, JTF or JFLCC responsibilities. However, divisions and corps will both be capable of functioning as a JTF and as a JFLCC with augmentation. Both organizations are designed to command and control a tailored mix of BCTs and Support Brigades.

Armies. Army or theater Army headquarters will serve as the Army component of a geographic combatant command. The theater Army will focus on the Army's component responsibilities for the entire theater's joint, interagency and multinational operational land forces. During major combat operations, where the geographic Combatant Commander is the Joint Force commander, the theater Army can become the JFLCC and exercise operational control over tactical land forces. Theater armies also command and control theater-level subordinate headquarters tailored to the requirements of the Joint Force commander and conditions in the theater.

Theater Subordinate Commands. At the theater level, theater Army headquarters may exercise command and control for up to seven different types of modular theater-level subordinate commands. These organizations fulfill unique command and control requirements over Support Brigades and area functions. The theater-level subordinate commands include:

- **Signal**. Theater-level command, control, communications, computers, communication, and information management is executed by a Signal Command (Theater) or a Tactical Theater Signal Brigade. These organizations execute network operations within the Army's portion of the Global Information Grid.
- **Intelligence**. Theater-level intelligence is executed by Theater Intelligence Brigades or Theater Intelligence Groups. These organizations coordinate and leverage joint and national intelligence capabilities in support of the Army or Joint Force commander.
- **Sustainment**. Theater-level sustainment and intra-theater logistics command and control (C2) is executed by the Theater Sustainment Command. This command also coordinates inter-theater logistics. The Theater Sustainment Command integrates Surface Deployment and Distribution Command (SDDC), Defense Logistics Agency (DLA), Special Operations Forces, Army Materiel Command (AMC), contractor and other agencies in sustainment operations. Theater Sustainment Command retains deployable command posts for distributed or early entry operations.
- **Civil Affairs**. Theater-level civil affairs planning, coordination, and synchronization and civil-military operations support is executed by the Civil Affairs Command. Additionally, this command provides staff augmentation, functional specialty teams, a Civil-Military Operations Center (CMOC)

and a Civil Information Management (CIM) cell.

- **Medical**. Theater-level medical C2 and administration is executed by the Medical Deployment Support Command. This command also retains an operational command post for distributed or early entry operations.
- **Aviation**. Two CONUS-based Theater Aviation Commands will establish a pool of theater-level aviation to support missions requiring reinforcement of Combat Aviation Brigades. Each command retains a Support Brigade, an assault brigade and a Theater Aviation Operations Command (TAOC).
- **Air and Missile Defense**. Some theaters will receive Area Air and Missile Defense Commands (AAMDC) to provide critical theater air defense and missile defense against hostile aircraft, ballistic missiles and unmanned aerial vehicles.

Support Brigades. The Army retains a wide array of functional Support Brigades that will be discussed later in this annex. In addition to improving the capabilities within these functional Support Brigades, the Army is also developing multifunctional Support Brigades to increase its capabilities for full-spectrum operations. Support Brigades are self-contained organizations that are capable of deploying and operating independently. They will be tailorable based on mission, enemy, terrain and weather, time, troops available and civilian (METT-TC). The five multifunctional Support Brigade types are:

- Fires Brigade (Fires)
- Battlefield Surveillance Brigade (BfSB)
- Combat Support Brigade (Maneuver Enhancement) (CSB(ME))
- Sustainment Brigade (SUST BDE)
- Combat Aviation Brigade (CAB)

Each Support Brigade shares a set of common characteristics. The brigades will be modular so that they can plug in to or out of any headquarters easily and effectively. Each will have the network connectivity and a liaison officer to work not only for higher operational headquarters, but also for another service, another functional headquarters or a multinational headquarters. These units will be inherently joint in that they will be able to access and use appropriate joint enablers to accomplish their functions, and they will be able to, in turn, contribute to the joint capability. Finally, the Support Brigades will have capabilities that can be used by the operational commander to task organize other elements assigned to the force package or task force.

Fires Brigade. The fires brigade will provide the land force commander with precision strike capabilities that can control both Army and joint fires throughout the depth of the area of operations. It has organic target acquisition capabilities and will be tied

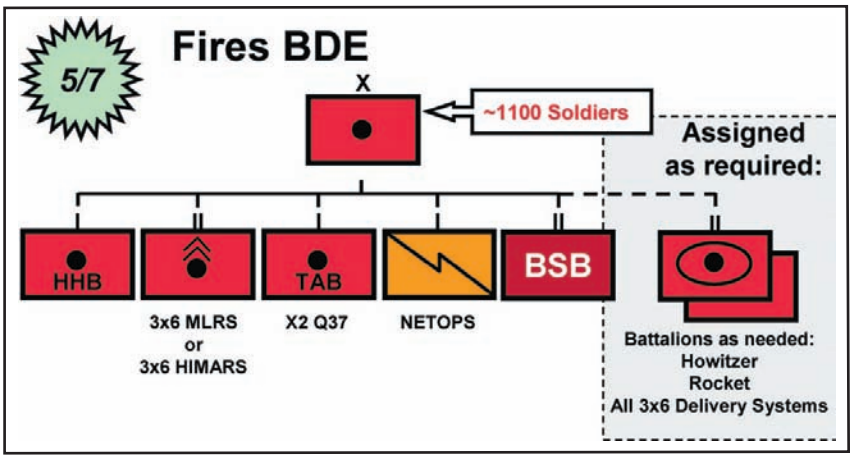


Figure B-6. Fires Brigade

closely to reconnaissance and surveillance assets. It is capable of executing both lethal and nonlethal effects for the commander and will be able to direct armed unmanned aerial vehicles (UAVs).

Battlefield Surveillance Brigade. As its primary mission, the BfSB will synchronize all of the dedicated collection assets available to the operational commander. It will link to joint intelligence, surveillance and reconnaissance capabilities. This brigade will complement the situational awareness developed by the maneuver brigades and lead the fight for information within its area of operation.

Combat Support Brigade (Maneuver Enhancement). The CSB(ME) brigade will synchronize protection, mobility and unique effects capabilities across the entire area of operations. It can serve as the joint rear coordinator when the Joint Force commander designates the Army to carry out this function. It will have a staff capable of planning air defense, nuclear, biological and chemical (NBC) defense, military police actions and construction engineer tasks.

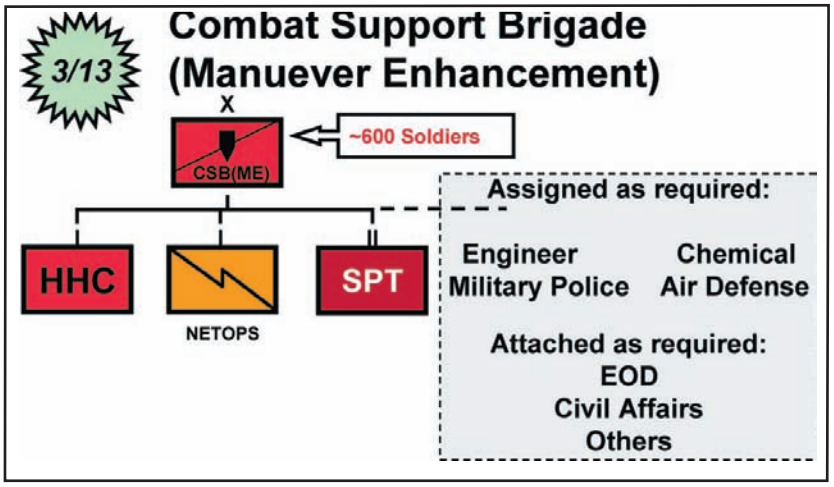


Figure B-8. Combat Support Brigade (Maneuver Enhancement)

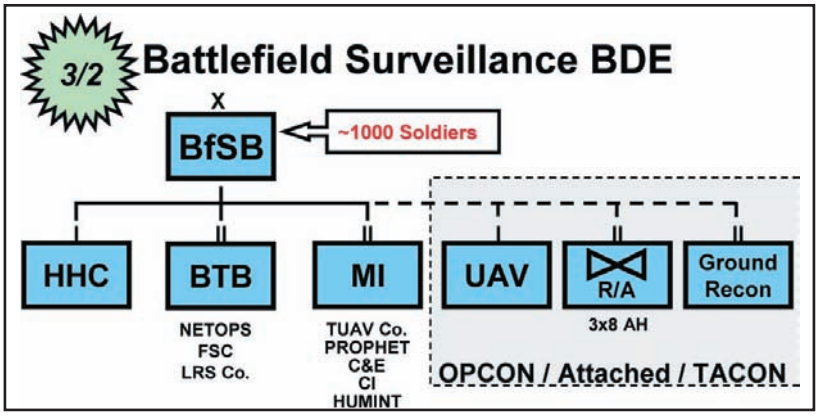


Figure B-7. Battlefield Surveillance Brigade

Sustainment Brigade. The sustainment brigade will provide logistics support for all echelons within the area of operations. The sustainment brigade will link theater-level supply and service activities with the maneuver brigades' organic sustainment organizations. Over the near term, the Army is developing a comprehensive sustainment concept for the new force design.

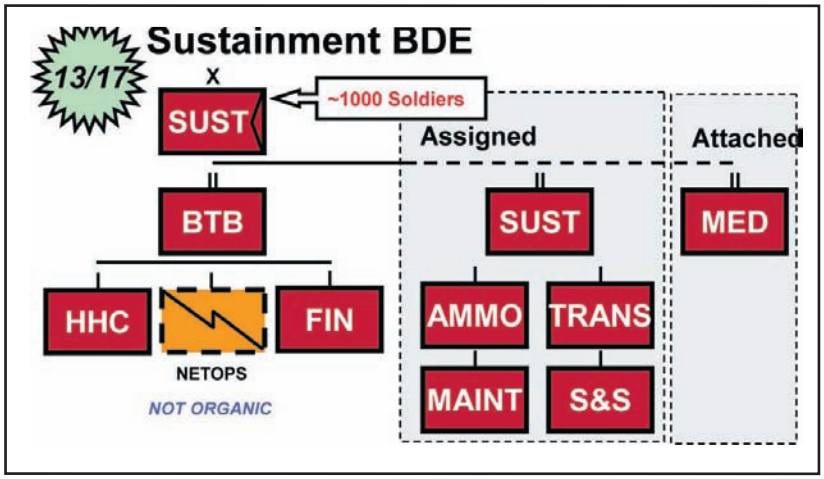


Figure B-9. Sustainment Brigade

Combat Aviation Brigade. The CAB will be fully capable of planning, preparing for, executing and assessing mobile strike operations and deep attacks using attack helicopters. It will retain a fully capable fire support element that possesses suppression of enemy air defense, maintains the intelligence links to track targets, and includes the Army aviation battle command element to coordinate airspace control measures as necessary—all linked to the appropriate joint systems. CABs come in four variants: Heavy, medium, light and ARNG aviation expeditionary brigades. In addition to the four CAB variants, the Army is also converting the aviation squadrons associated with the armored cavalry regiments to air cavalry squadrons. Air cavalry squadrons will continue to support ACR or SBCT operations as required.

When completed, Army modular organizations will be menu items—brigade-sized formations that accomplish the major functions required for the full range of military operations from which the Joint Force commander may choose to meet his needs. The mission requirements determine the mix of forces without the constraints of fixed, large, standing organizations such as divisions or corps.

Posture of Army Modular Formations. The Army is adjusting its global force posture to meet the needs of Combatant Commanders. We are taking steps to accelerate our strategic responsiveness while simultaneously reducing our overseas footprint and exposure:

- Establishing a comprehensive Army Force Generation process to provide Combatant Commanders and civil authorities with rapidly deployable and employable Army forces
- Resetting Army prepositioned equipment sets into modular configurations
- Building modular capabilities that improve theater force reception and deployed logistics

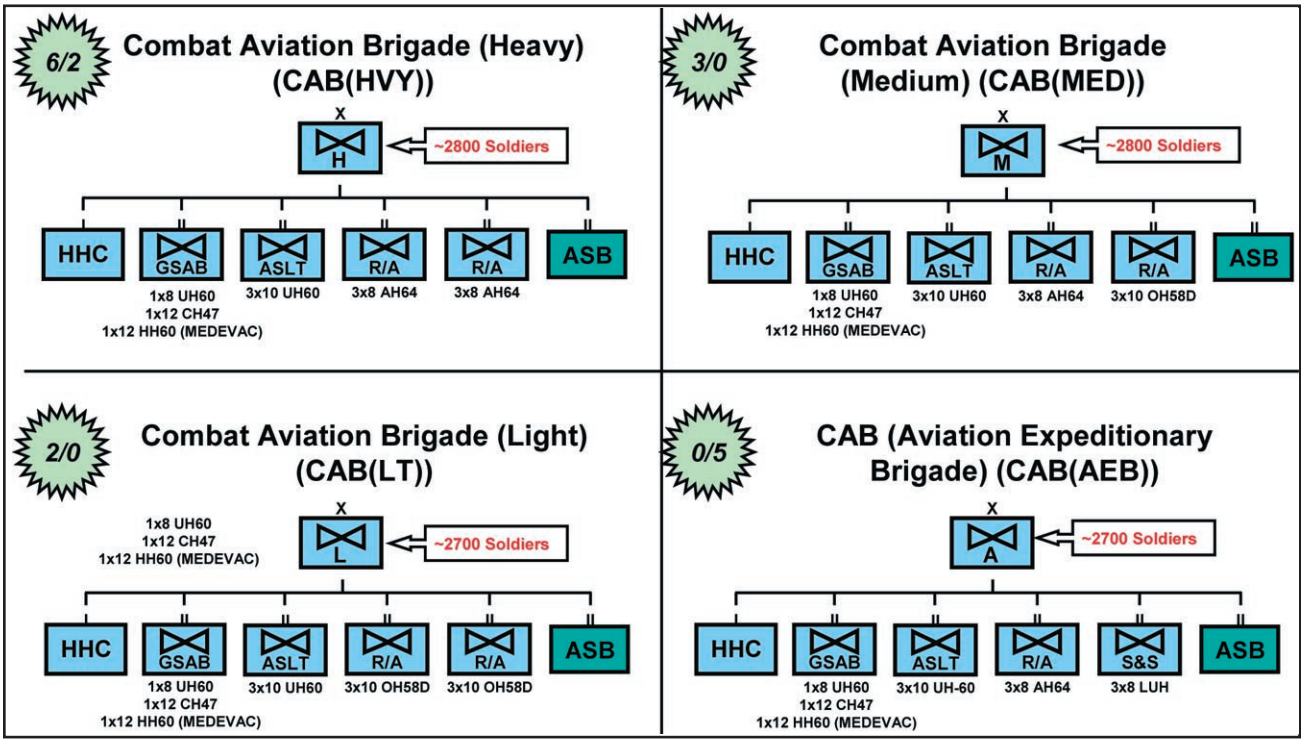
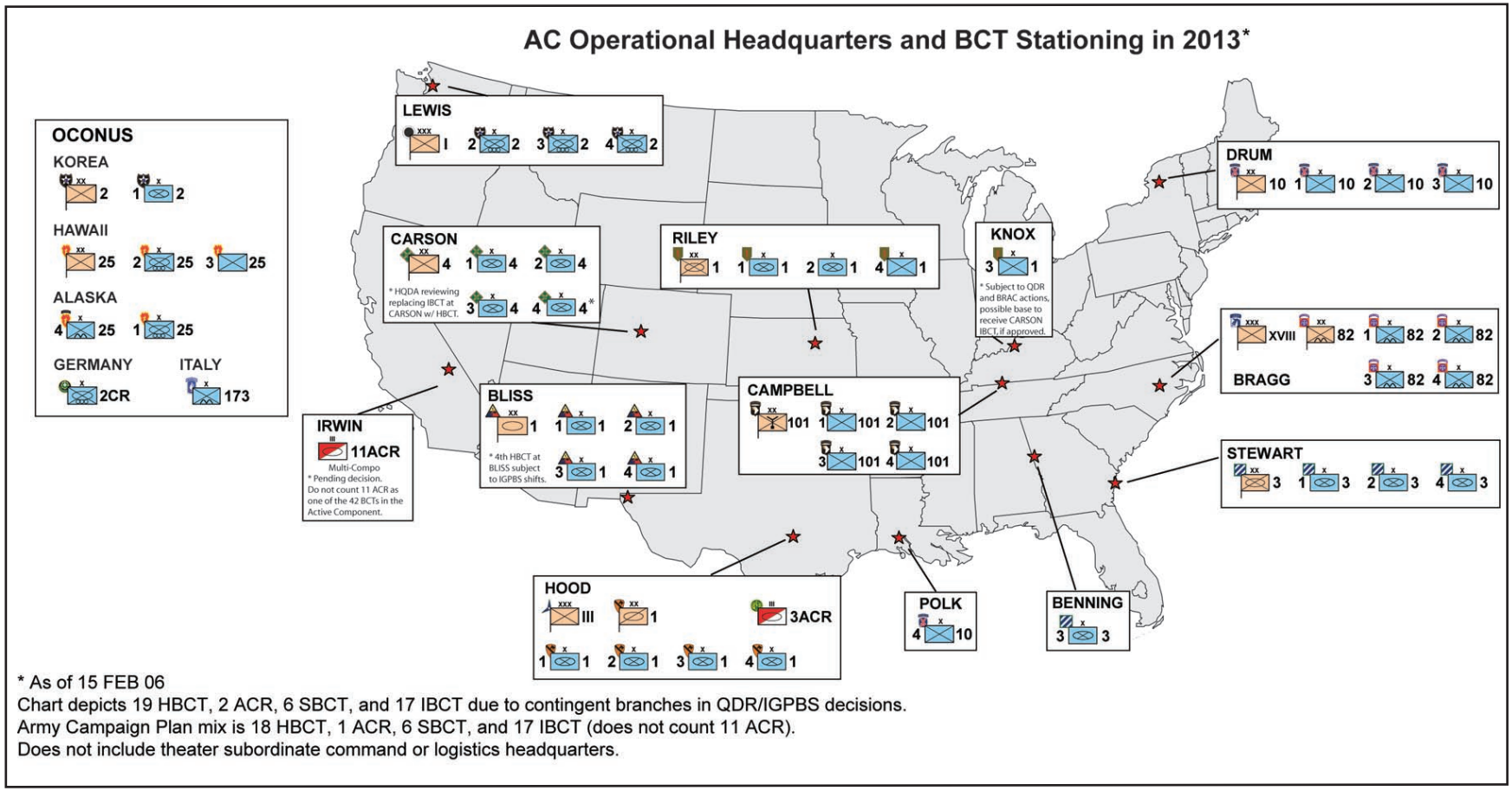


Figure B-10. Combat Aviation Brigade Variants



* As of 15 FEB 06
Chart depicts 19 HBCT, 2 ACR, 6 SBCT, and 17 IBCT due to contingent branches in QDR/IGPBS decisions.
Army Campaign Plan mix is 18 HBCT, 1 ACR, 6 SBCT, and 17 IBCT (does not count 11 ACR).
Does not include theater subordinate command or logistics headquarters.

Figure B-11. AC Operational Headquarters and BCT Stationing in 2013

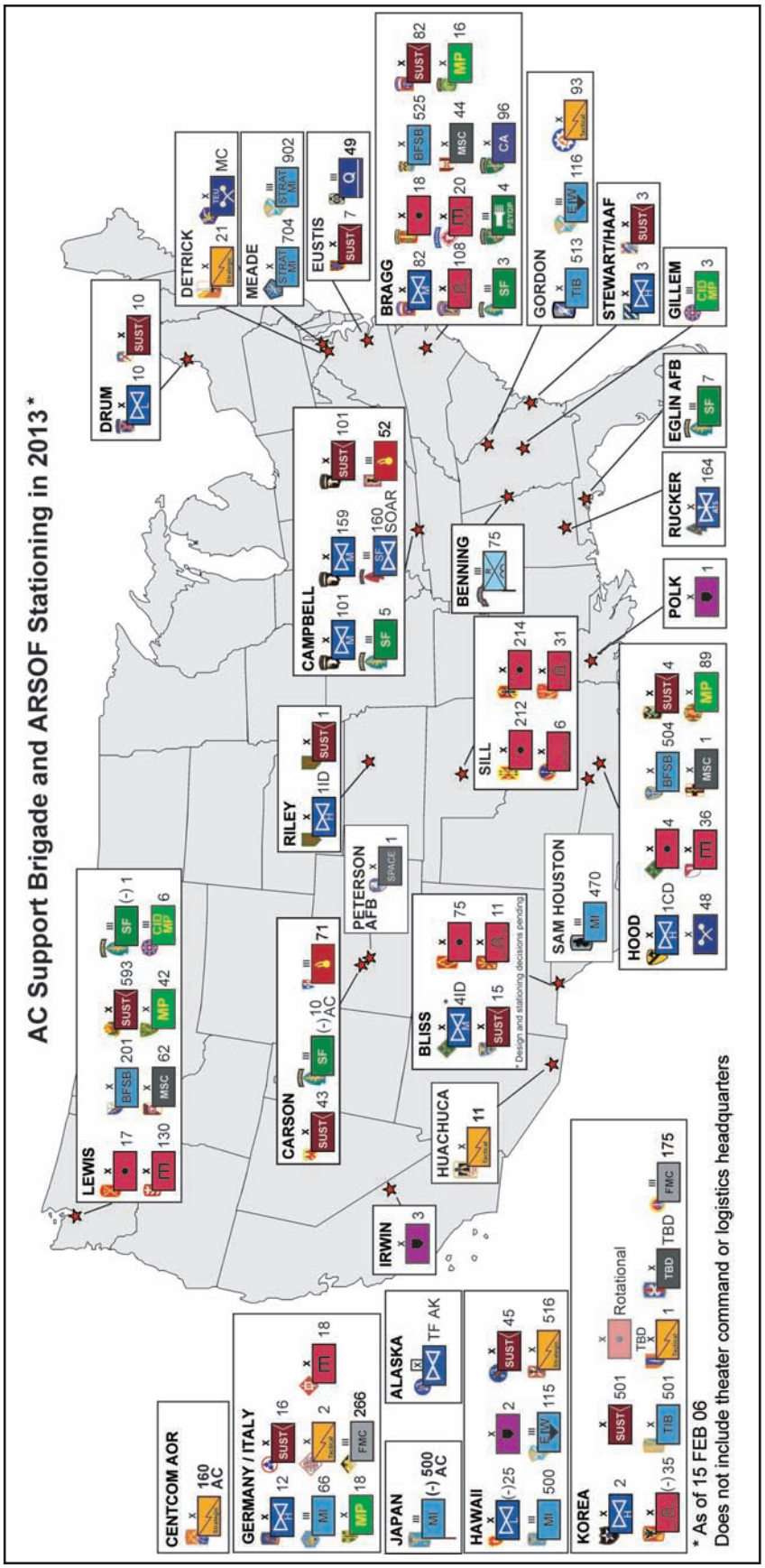


Figure B-12. AC Support Brigade and ARSOF Stationing in 2013

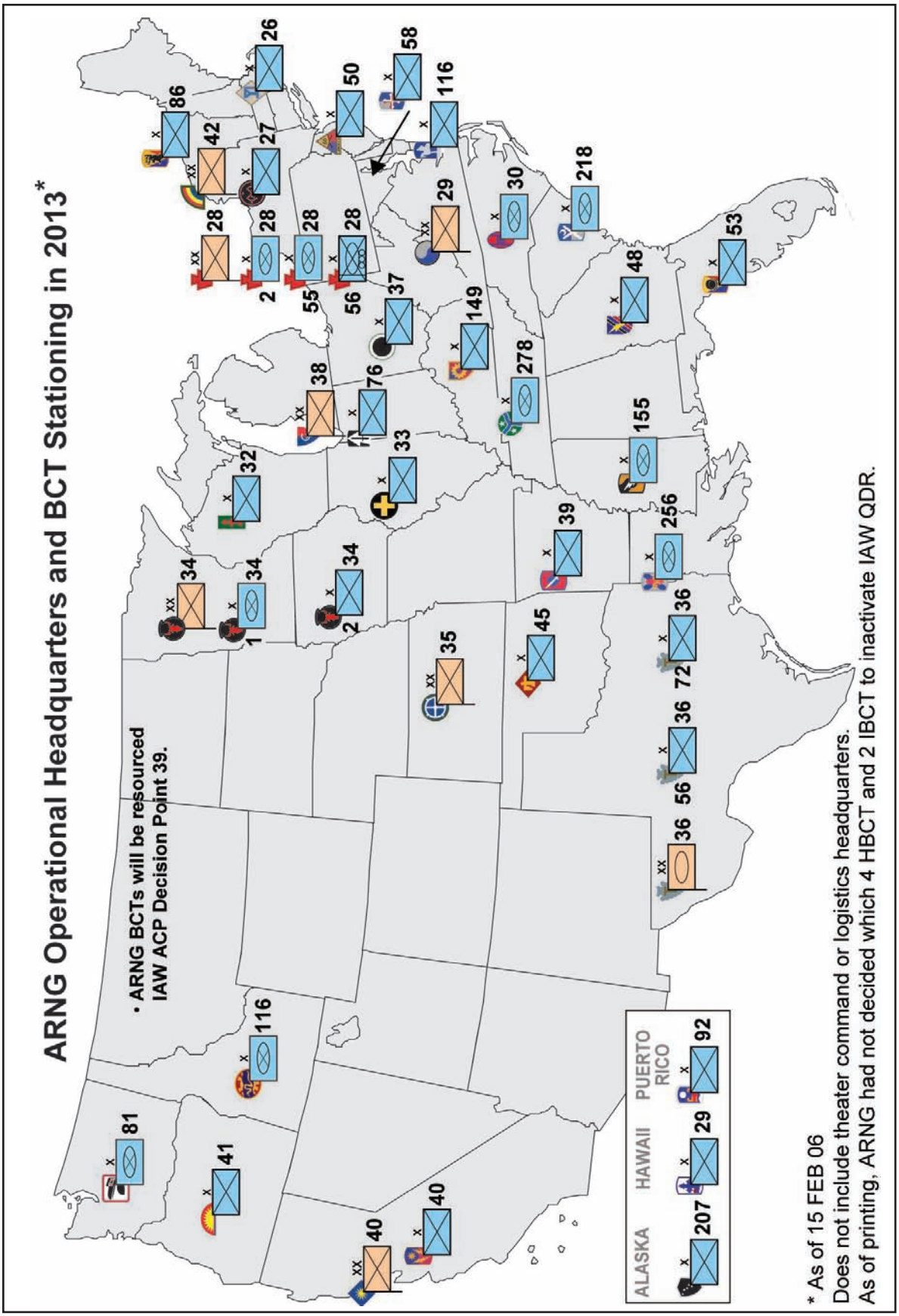


Figure B-13. ARNG Operational Headquarters and BCT Stationing in 2013

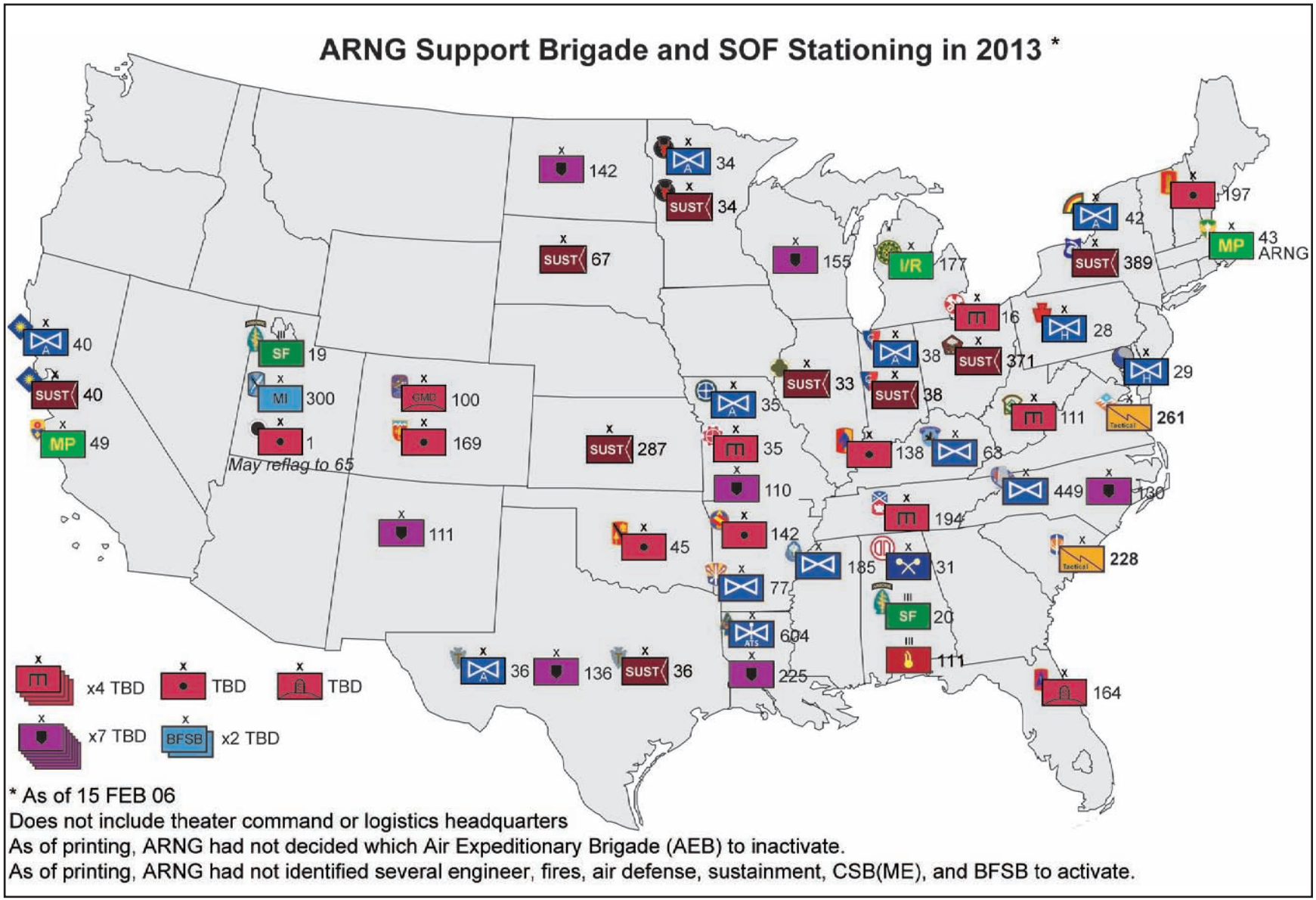


Figure B-14. ARNG Support Brigade and SOF Stationing in 2013

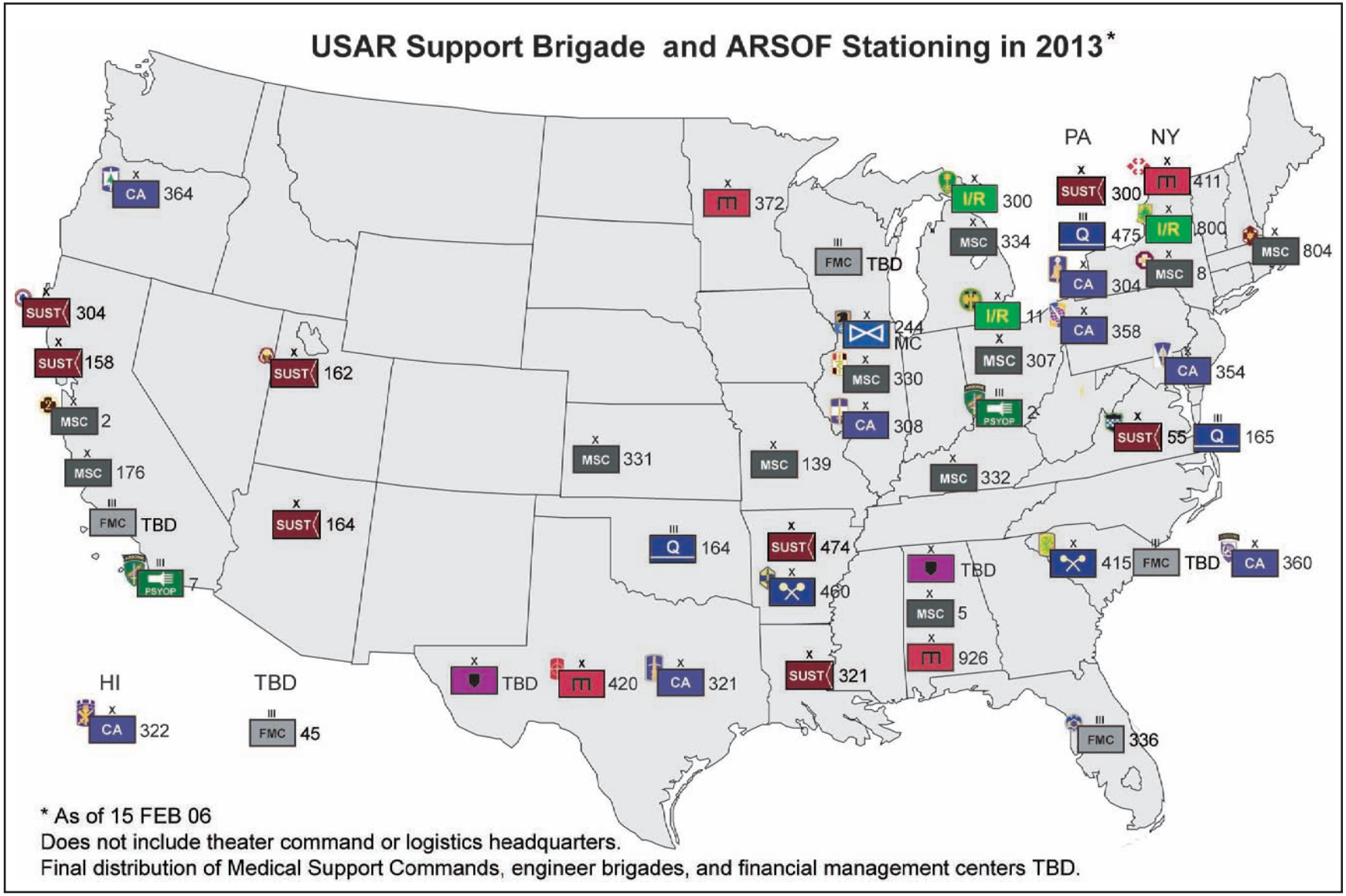


Figure B-15. USAR Support Brigade and ARSOF Stationing in 2013

- Identifying and improving infrastructure at critical power projection installations to increase to support mobilization, demobilization and rapid deployment. Updating institutional processes to prepare forces for rapid deployments and to support forces in sustained expeditionary operations. Parallel with Army efforts to improve responsiveness, the Army is repositioning its ground forces to meet a unit rotation model that is synchronized to Army force generation processes. These efforts include Army support of Base Realignment and Closure (BRAC) and Integrated Global Presence and Basing Strategy (IGPBS) efforts.

Operating Force: Functional Capabilities

Though modular Army formations are well-equipped to operate across the full range of military operations, the Army is examining specific functional capabilities that it provides to the Combatant Commanders.

Modular Sustainment. As the Army modularly converts to improve its full-spectrum capabilities, its logistics capability will similarly transform. Training and Doctrine Command (TRADOC), AMC and units in the field are exploring concepts for modularly converting Army tactical and operational-level sustainment units to provide the best possible support to Army units operating as part of a joint force. The effect of modularity on logistics will be characterized by more modular and capable sustainment organizations and reduced echelons that allow for increased throughput directly to forward locations. At the core of this shift is the development of a combat force with increased self-sustainment capabilities that can conduct sustainment operations internally while relying on the distribution system to enable logistics reach.

Logistics command and control (C2) will be capable of deploying small elements immediately and expanding as the theater develops. This guarantees a single logistics C2 within the theater from the beginning of any operation. The C2 structure will be joint-capable and interdependent. The modular Army will be expeditionary and its logistics capability will enable the rapid employment of these forces. A theater opening capability will meet this need. This organization will be specifically designed, equipped and trained to quickly receive forces and prepare them for onward movement and employment. No longer will maneuver units be expected to devote their organic assets to receive themselves in an area of responsibility (AOR).

The Army is committed to an enterprise solution for integrated logistics processes, the ability to support collaborative planning and forecasting, and an overarching architecture integrated within the joint business enterprise. Using commercial off-the-shelf technology, Army logistics is integrating its strategic business processes with its tactical logistics systems, including development of a single data repository for seamless linkage from the national to the tactical level.

At all levels, Army logistics is prepared to contribute to and employ joint solutions for the Joint Force commander. The Army will provide combatant and expeditionary capabilities that support the full range of military operations at all levels. This includes a responsive logistics infrastructure with simultaneous deployment, employment and sustainment capabilities at the strategic and operational levels, complemented by a single, integrated and responsive end-to-end distribution system. These capabilities will integrate interagency and multinational resources and move to a single joint logistics command and

control capability for joint force and regional Combatant Commanders.

Army Special Operations Forces (ARSOF). Army Special Operations Forces provide the joint force with niche capabilities in shaping the security environment by dissuading and deterring potential adversaries, creating indigenous capabilities that strengthen resistance against potential adversaries, and executing prompt, responsive, and decisive operations to achieve military and national objectives. ARSOF transformation and growth is critical to sustain the current and projected OPTEMPO requirements of the global war on terrorism and other future operations. Army Special Operations Forces have over 6,400 Soldiers actively engaged in 74 countries on 119 missions. This OPTEMPO has required nearly total commitment of all AC and RC ARSOF forces for either current or projected operations.

ARSOF, Civil Affairs, Psychological Operations (PSYOP), Aviation, Rangers and combat service support (CSS) restructuring is essential to a long-term rotational expeditionary capability that supports the Army transformation strategy.

- **Special Forces Group (Airborne) (SFG (A))**. Band I redesign increases combat power by providing augmentation in battle staff support to Special Forces Operations Base (SFOB)(group) and Forward Operating Base (FOB)(battalion) that raise their self-sufficiency and sustainment capabilities and release an additional 12 Operational Detachment Alphas (ODA)(detachment) for tactical employment. SFG (A) Band II redesign further amplifies the battle staff, resulting in still greater self-sufficiency and sustainment capabilities. It maximizes the SFG (A) ability to train, plan, conduct and sustain full-spectrum unconventional warfare operations and theater crisis response missions. It integrates situational awareness technology and tactics, techniques and procedures (TTP) to the SF Advanced Operations Base (AOB)(company) level. SFG (A) Band III redesign adds an additional Special Forces battalion, a fire support element within the group headquarters to each of the five AC Special Forces Group (Airborne). SFG (A) Band I-III will transform the Special Forces Group (Airborne) into an organization of significantly greater depth, capability, and self sufficiency that is more capable of prosecuting ARSOF missions in support of the global war on terrorism.
- **Civil Affairs (CA)**. Civil Affairs redesign provides a more robust force structure in support of ARSOF requirements by creating an AC CA brigade with four regionally oriented AC CA battalions and adding a fourth RC CA company to each USAR CA battalion. Common to AC and RC redesigns are new capabilities such as enhanced Civil Affairs Teams (CAT), an organic and deployable CMOC, organic Civil Affairs Planning Teams (CAPT), and an organic Civil Information Management (CIM) cell capable of integrating and fusing the Civil Common Operating Picture (COP) into the Joint Force commander's COP.
- **Psychological Operations (PSYOP)**. PSYOP redesign creates additional AC and RC Tactical PSYOP Companies and two additional RC Tactical Battalions. Common between AC and RC redesigns are new capabilities such as enhanced tactical PSYOP companies equipped with organic print capability, enhanced Regional PSYOP battalions in the AC only that are capable of forming the core of Psychological Operations Task Forces

(POTF). AC and RC dissemination forces have been rebalanced, with improved reachback technologies that ensure the rapid development and production of PSYOP products, and fielding of the latest product dissemination technology (radio, TV, print) for advanced distribution capabilities.

- **Ranger Regiment**. Ranger XXI force structure redesign will afford the 75th Ranger Regiment the requisite command, control, reconnaissance, intelligence, strike and support personnel, equipment, and training to conduct sustained combat operations in support of the global war on terrorism, conduct combat operations in support of Combatant Commanders across the full spectrum of conflict, and train to the Ranger standard, all while maintaining systems at home station.
- **Army Special Operations Aviation (ARSOA)**. ARSOA redesign creates a robust force structure for the 160th Special Operations Aviation Regiment (Airborne) capable of providing sustained special operations rotary-wing aviation support (high-demand/low-density asset) to both Army and other joint SOF elements. The Forward Expeditionary force structure is conceptually modular; aviation expeditionary forces are more flexible, sustainable and mission tailored. Once resourced, all ARSOA battalions will field like-model aircraft (MH-47G, MH-60M and A/MH-6M) and be able to deploy modular Special Operations Aviation Expeditionary Detachments (SOAED) with enhanced command, control and sustainment capabilities.
- **ARSOF Sustainment.** The USASOC will restructure ARSOF operational level logistical concept by creating the Sustainment Brigade (Special Operations)(Airborne) that will plan, integrate and assess Army common and SOF peculiar logistics to sustain SOF employment. The USASOC will activate five group support battalions organic to each of the AC Special Forces Group, a support operations detachment for the Ranger special troop battalion (RSTB), 75th Ranger Regiment and three Ranger battalion support companies to each Ranger battalion.

Air and Missile Defense (AMD). The Army will no longer provide an organic Air Defense Artillery (ADA) battalion to its divisions. Six of the ten AC divisional ADA battalions and four of the eight ARNG divisional ADA battalions will inactivate. The remaining four AC divisional ADA battalions, along with four ARNG divisional ADA battalions, will be pooled at the theater-level to provide air and missile defense protection based on METT-TC. The pool of Army AMD resources will address operational requirements in a tailorable and timely manner without stripping assigned AMD capability from other missions. This pooling concept supports the Army's effort to move to modular designs that allow force tailoring of units better sized to meet Combatant Commanders needs and homeland security/defense requirements.

The AMD transition plan converts the AMD force to modular designs with the capability to meet the emerging threat of tactical ballistic missiles, cruise missiles and unmanned aerial vehicles.

Future Engineer Force. Engineer transformation is an essential part of achieving the capabilities required for joint and Army future force success. The primary function of the Army engineer is to provide assured mobility—the processes, actions, and enabling capabilities intended to guarantee the maneuver force commander the ability to maneuver

when and where he desires, without interruption or delay, to achieve his intent. The future engineer force provides this assurance through modular organizations that are adaptable and capable of augmenting maneuver BCTs, Support Brigades, divisions and corps. There are two categories of future engineer force organizations: Embedded Engineer Force and Engineer Force Pool.

The Embedded Engineer Force is organic to the maneuver BCTs. The Engineer Force Pool includes all engineer units not organic to BCTs or embedded in a BCT, division or corps staff. The Engineer Force Pool consists of baseline forces, mission unit forces and Engineer battle command. The baseline engineer force contains modular engineer capabilities and scalable command and control plugs frequently required by both maneuver BCTs and Support Brigades supporting division and corps. Baseline forces serve as the primary building blocks for providing tactical and operational engineer capabilities. The mission unit force is comprised of highly specialized engineer capabilities required by baseline forces to execute some missions in support of maneuver BCTs, Support Brigades, operational headquarters and virtually most of the engineer missions at theater level.

Medical Modernization. The Army continues to work toward completion of the Medical Reengineering Initiative (MRI) as resources become available. MRI reorganizes deployable medical forces at the theater level and provides the transitional pathway to the future force. To permit rapid integration to joint expeditionary applications, the Army Medical Department has introduced a new concept known as Adaptive Medical Increments (AMI). AMI restructures existing medical forces into a selection of prepackaged, cellular subcomponents that can be chosen as menu items.

As a component of Army-wide restructuring, our RC is divesting itself of specific laboratory specialties that historically are difficult to recruit and maintain. At the same time, the RC is increasing its medical logistics support capabilities. This shift of technical specialties to the AC will improve the Army's ability to respond quickly to the growing number of contingencies across the globe.

Chemical Corps Redesign. The U.S. Army Chemical Corps is undertaking a dramatic change of its force structure to create modular and flexible organizations to better support both warfighters and domestic response requirements. The redesign of the Chemical Corps simplifies its overall force structure. The CS companies, corps and heavy divisional chemical companies will all be multifunctional companies. The CS Company will have platoons capable of conducting NBC reconnaissance and decontamination missions. Additionally, these companies will have platoons structured to perform biological detection. All of these companies will possess the skills and training necessary to support forces in combat as well as to provide support to DOD or civilian authorities in response to domestic chemical, biological, radiological and nuclear (CBRN) incidents. Challenges are anticipated in ensuring these units are equipped with the reconnaissance platforms, decontamination systems and biological detection equipment necessary to perform their critical missions.

Baseline biological detection and large area smoke generation will continue to be provided by specialized units, and Chemical Corps personnel will continue to man critical staff positions throughout the Army to advise and train personnel in NBC defense.

Military Police. Military Police Corps changes are a combination of organiza-

tional designs, increases in force structure to better accommodate requirements and better balance of the AC/RC force mix. The primary design change is restructure of the internment/resettlement (I/R) battalions to provide the Soldier/unit skill set required to better meet current and emerging worldwide detainee operations, while still being able to conduct traditional enemy prisoners of war (EPW) and U.S. military confinement missions. The new I/R battalion design retains existing modular and scalable characteristics, and can be sourced with AC and RC units. As part of the modular BCT designs, a robust MP platoon is now organic to the HBCTs and IBCTs. Additionally, the Military Police Corps is standardizing many of its companies. This effort decreases the number of specialized limited purpose organizations and increases the number of multifunctional MP CS companies. These multi-functional companies will be optimized to support other modular units.

Demand for law enforcement, criminal investigations, detention operations and combat operations will remain high during this period of sustained operations. The MP Corps in particular will experience very high operational tempo compared to the rest of the force, and the Army estimates that this demand will remain high. In response, the Army is increasing the number of AC MP organizations to better meet requirements to reduce stress on MP units. Military police will be better organized to meet sustained rotational demands for operations such as guarding detainees, contributing to peacekeeping missions, investigating terrorist and criminal operations, and supporting reestablishment of law and order, conducting stability, and countering insurgency operations following major combat operations.

Army Signal. Army Signal force structure is in the process of reorganization through multiple force design updates: Integrated Theater Signal Battalion (ITSB), Tactical Installation and Networking (TIN) Company, JTF/JFLCC) command, control, communications, and computers (C4) packages, and network operations (NETOPS) updates. These changes create a deployable, scalable, modular structure with standardized capability, equipment and training Army wide. The ITSB provides a multifunctional structure that significantly streamlines theater signal structure; reduces the requirement to task organize ("train-as-we-fight" dictum), and bridges the gap between the current and future signal architecture. The TIN company design adds/enhances network installation capabilities to the Army's cable and wire companies. The new design is flexible enough to resource the range of military operations from major combat operations to small small-scale contingencies to homeland defense operations. The NETOPS force structure update implements the three tenets of NETOPS (network management, information assurance, and information dissemination management) in a tiered Signal command structure providing real time collaborative, integrated, and seamless end-to-end management and defense of theater level strategic and tactical networks for all Army global applications and information services. This is only the beginning of reshaping Army Signal force structure. Ongoing developments in signal structure below the corps level are still being refined. The Army is leveraging technological developments in order to consolidate networks into fully integrated enterprise architectures for all Army forces.

Multi-Component Units. A Multi-Component Unit (MCU) combines personnel and/or equipment from more than one component on a single authorization document. The intent is to maximize integration of AC and RC resources in an austere environment. MCUs

have unity of command and control similar to that of single component units. MCU brigade and division headquarters (such as those in the Division XXI) were reorganized to component pure. However, CS and CSS units of echelons above the brigade continue to provide support optimizing AC and RC resources. MCU status does not change a unit's doctrinal requirement for personnel and equipment, force packaging, or tiered resourcing. MCU selection is based on mission requirements, unique component capabilities and limitations, readiness implications, efficiencies to be gained, and the ability and willingness of each component to contribute the necessary resources. The Army continues to refine the mix of AC and RC in these units to enable them to more effectively support mission requirements.

Posture of Army Functional Organizations. Army functional organizations and their stationing are still undergoing significant review and will be captured in the Army Campaign Plan, Change 3, to be published in mid-2006.

Operating and Generating Forces: Army Force Generation (ARFORGEN)

The new strategic context of continuous operations renders obsolete the old Army readiness paradigm of "all ready, all the time." Continuous, full-spectrum expeditionary operations are the new reality. To meet this new strategic context, the Army is developing a process of force generation to provide Combatant Commanders and civil authorities with rapidly deployable, employable, and sustainable force capabilities packages tailored to specific mission requirements. Implementation of ARFORGEN cuts across the entire Army. While having a profound effect on operating forces, ARFORGEN processes also shape the ways the institutional base executes Service Title 10 and executive agent functions.

Army Force Generation leverages modular unit designs and operational cycles to provide a sustained deployment posture of operationally ready units in predictable patterns. The process retains the capability to surge combat power for major combat operations. The ARFORGEN process assists commanders to identify predictable deployment windows and manage readiness and training of forces accordingly. These windows are based on the objective cyclic rotation rates of active and RC forces defined in 9 July 2003 SECDEF memorandum goals: One deployment in three years for the AC and one deployment in six years for the RC.

The ARFORGEN process creates operational readiness cycles where individual units increase their readiness over time, culminating in full mission readiness and availability to deploy. Manning, equipping, resourcing and training processes are synchronized to the ARFORGEN process. To achieve the readiness progression required by operational readiness cycles, units transition through three ARFORGEN-defined readiness pools:

- **Reset/Train**. Units recover from previous deployments, reconstitute, reset equipment, receive new equipment, assign new personnel and train to achieve the required unit capability level necessary to enter the READY force pool.
- **Ready**. Units are assessed as ready to conduct mission preparation and higher-level collective training with other operational headquarters for upcoming missions. These units are also eligible to fill operational surge requirements, if necessary.

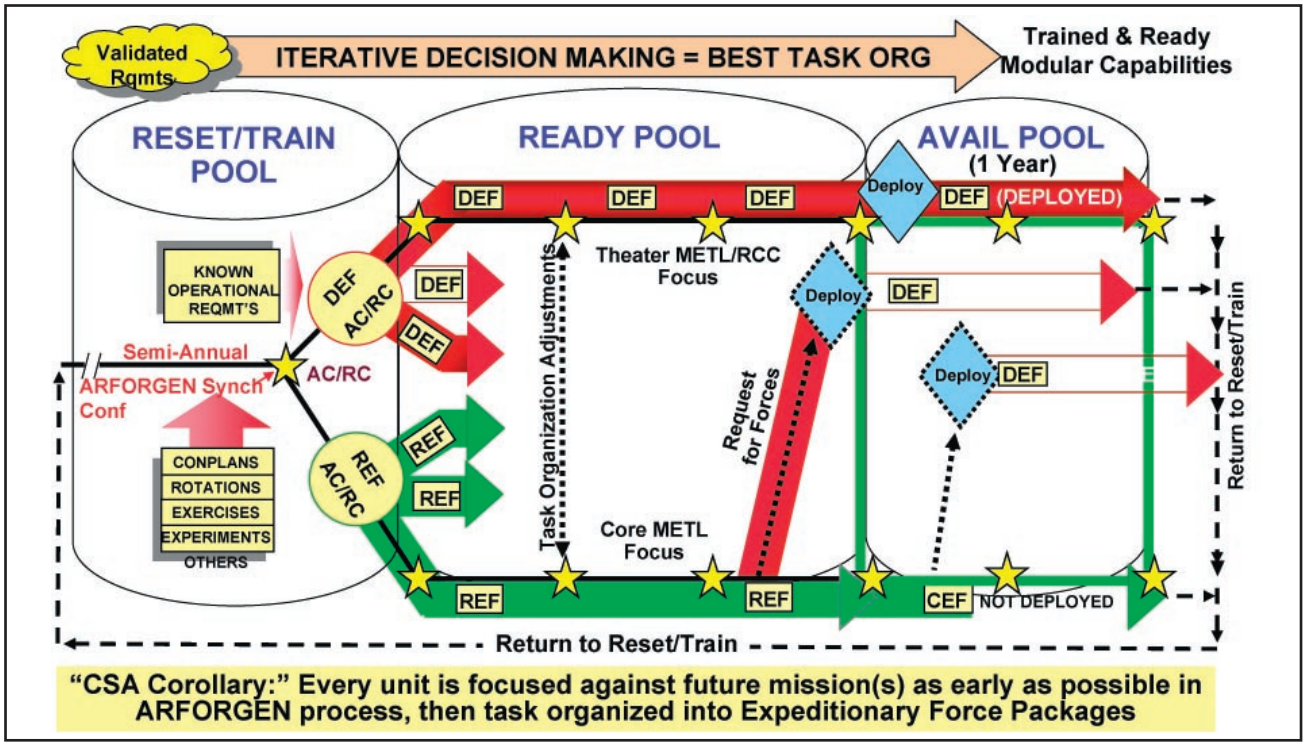


Figure B-16. ARFORGEN

UNITS	FY10 Force Mix	RESET / TRAIN FORCE POOL	READY FORCE POOL	AVAILABLE FORCE POOL
Operational HQs	19			
AC BCTs	HVY 19 SBCT 6 INF 17 42	HVY 5 SBCT 2 INF 4 11	HVY 8 SBCT 2 INF 7 17 ← 31 deployable →	HVY 6 SBCT 2 INF 6 14
RC BCTs	HVY 6 SBCT 1 INF 21 28	HVY 3 SBCT 1 INF 10 14	HVY 2 SBCT 0 INF 7 9 ← 14 deployable →	HVY 1 SBCT 0 INF 4 5
AC Support Brigades	CAB 11 SUSTAIN 13 FIRES 5 BFSB 3 CSB(ME) 3	CAB 3 SUSTAIN 3 FIRES 1 BFSB 1 CSB(ME) 1	CAB 4 SUSTAIN 6 FIRES 2 BFSB 1 CSB(ME) 1	CAB 4 SUSTAIN 4 FIRES 2 BFSB 1 CSB(ME) 1
RC Support Brigades	CAB 7 SUSTAIN 17 FIRES 7 CSB(ME) 14	CAB 4 SUSTAIN 9 FIRES 4 CSB(ME) 7	CAB 2 SUSTAIN 5 FIRES 2 CSB(ME) 6	CAB 1 SUSTAIN 3 FIRES 1 CSB(ME) 2
		Not Ready or Available for MCO ≈ 17% - 25% of AC ≈ 50% of RC	Surge Capability ≈ 42% - 50% of AC ≈ 33% of RC	Available or Deployed ≈ 33% of AC ≈ 17% of RC
Increasing Unit Readiness				
* Force Pool Distribution Rules:		AC: 1/4 RC: 1/2	AC: 5/12 RC: 1/3	AC: 1/3 RC: 1/6

NOTIONAL

Figure B-17. ARFORGEN

- **Available**. Units that are within their assigned window for potential deployment. Units will be sourced against operational or contingency requirements.

Generating Force: Institutional Adaptation

Under U.S. Code Title 10, the Army's generating forces provide management, development, readiness, deployment and sustainment of Army operating forces. The Army's generating force consists of approximately 2,400 units and consists of approximately 25 percent of total Army authorized end strength across the AC and RC.

Despite alleviating stress through the temporary 30,000 Soldier increase in our operating strength, the Army will remained stressed to meet anticipated requirements. In September 2005, the Army revised downward the period of time that it estimated it could afford to maintain a 512,400 force. To further grow the operational forces within the Army during a period of declining budgets and manpower authorizations, we are conducting a Total Army Analysis process to design a 482,400 AC and 555,000 RC force that appropriately balances force management risks.

This updated TAA and its aggressive restructuring effort will attempt to shift 40,000 Soldiers from the generating force into operating forces over the next six years. The Army intends to implement personnel policies that gain efficiencies in the Army's institutional base and generating forces while accepting greater risk within our combat support and combat service support formations. Combined, these initiatives should allow the Army to retain the gains made in combat formations and operational headquarters while the additional personnel authorizations are still afford-

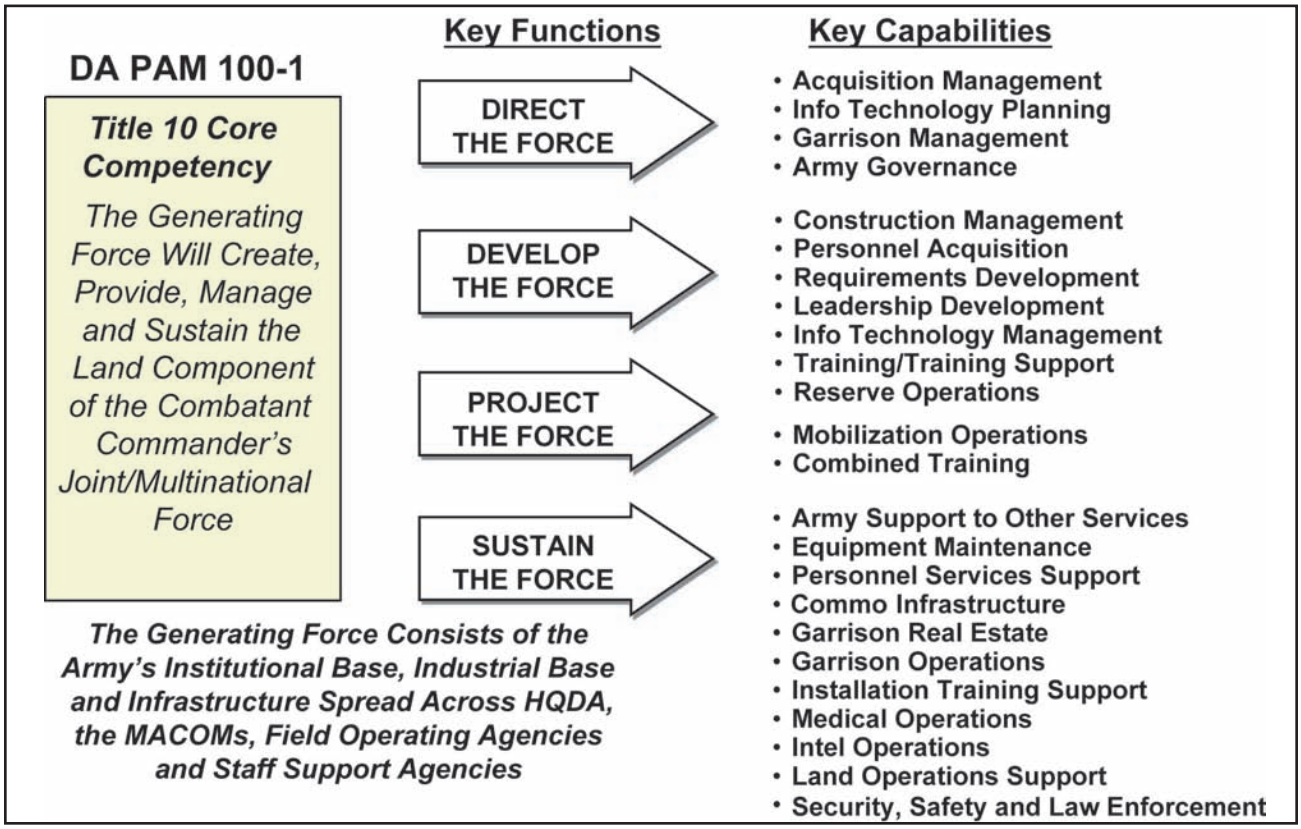


Figure B-18. Army Generating Forces

able. Force management risk is high within this area, and we must preserve the viability of support and generating force functions while we attempt to increase combat power at a 482,400 end strength.

The generating force is particularly vulnerable to increasing operational commitments and fiscal pressures. It is unlikely that resources for sustaining a protracted conflict and preparing ourselves for the next one will increase significantly. The Army must be prepared for a reduction in funding, with a concurrent deterioration in the Army's equipment, industrial base and infrastructure. Coinciding with aforementioned projected cuts within the generating force starting in FY08, increasing operational demands for generating force capabilities emphasizes the gravity of the decisions the Army must make to balance operating and generating force capabilities.

This design of the generating force is a critical component of the overall Army transformation strategy and is captured under the campaign objective of "Adapt the Institutional Army" within the Army Campaign Plan. Institutional adaptation began implementation in late 2005 with a series of decisions to achieve the following goals:

- Transform the institutional base to more efficiently perform Service Title 10 and executive agent functions that support implementation of Army Force Generation.
- Divest nonessential functions, remove unnecessary layering and duplication, consolidate functions, resource in the most cost-effective manner, and privatize or outsource functions where applicable.
- Develop a joint interdependent, end-to-end logistics structure that integrates a responsive civil-military sustaining base to better meet Army operational requirements.
- Foster a culture of innovation to significantly increase institutional agility.
- Convert military positions to civilian positions, where appropriate, to improve availability of Soldiers for deploying units.

Generating Force: Business Transformation

The Army is aggressively seeking ways to prioritize our limited resources to meet our most strategically significant requirements while increasing our individual and organizational productivity. To accomplish this, the Army is transforming the way we do business. The Army is adapting many components of existing processes, to include:

- Adapting the institutional base of the Army in terms of roles and resources to gain efficiencies. Simultaneously, the Army can apply personnel savings from this restructuring to increase capabilities in the operating force.
- Increasing the productivity of business processes to minimize the impact of fiscal pressures and emerging requirements. Enhanced productivity results from reforming value chains while simultaneously divesting non-core functions.
- Improving the level of proficiency of our organizational leaders to implement disciplined and measurable approaches to reduce waste and streamline organizations—following Lean Six Sigma and other best practices.

Business transformation will follow an aggressive schedule—with Lean Six Sigma implementation across the Army starting in FY06. By applying these techniques, the Army will

develop a competitive advantage required by our operational environment. In short, we can eliminate waste and focus on providing trained, equipped, educated, experienced and manned forces to the Combatant Commanders.

Conclusion

The Army's efforts to reshape its organization are comprehensive and lay at the heart of its transformation efforts. Like pieces of a puzzle, Army force generation processes are necessary complements to ensure that modular conversion, restructuring and restationing initiatives achieve the Army's objective to be a campaign-quality, joint and expeditionary force. Army formations stationed at power projection installations are pooled into force packages under ARFORGEN to make expeditionary operations easier to plan and execute. Restructuring across the AC and RC optimizes Army operating forces to the right capabilities packages for sustained operations. Generating force and business transformation efforts will simultaneously improve the Army's ability to man, train and equip Army operating forces during a period of dwindling resources and heavy operational demand. Implementing these interlocking concepts will relieve stress on the force, provide time to train, create more predictable deployment schedules, and enable the Army to maintain a continuous supply of ready land power to Combatant Commanders and civil authorities.

Annex C: Training and Leader Development

The Army's mission remains to provide trained and ready land forces to the designated Joint Force commanders to fight and win our nation's wars. This remains a nonnegotiable mission that the Army must accomplish. Our Army is at war with nearly 50 percent of its forces engaged in combat. We will continue to be so for the foreseeable future. Our Army is a proud member of the Joint Force, expertly serving our nation and its citizens as we continuously strive toward new goals and improved performance. The Soldier's training, readiness and welfare are central to all that we do.

The American Soldier remains indispensable to the joint team. Flexible, adaptive and competent Soldiers infused with the Warrior Ethos fight wars and win the peace. The individual Soldier is the centerpiece of our combat systems and formations. Training Soldiers and developing leaders to function effectively in units is central to mission success.

The recent experiences of our Soldiers and leaders have provided a wealth of information to help define the skills our leaders need to be successful. Today in Iraq and Afghanistan young officers, warrant officers (WOs) and noncommissioned officers (NCOs) are accomplishing extraordinarily complex tasks that go well beyond traditional warfighting missions. Their experiences offer a glimpse into the future operating environment. As such, our training programs at the combat training centers and in the school houses are further preparing leaders to operate in uncertain and complex environments.

The Army has two core competencies supported by a set of essential and enduring imperatives. The Army's core competencies are (1) train and equip Soldiers and grow leaders; and (2) provide relevant and ready land power capability to the Combatant Commander as part of the joint team. The 10 enduring imperatives are: implement transformation initiatives, improve capabilities for homeland defense, improve proficiencies against irregular challenges, improve capabilities for stability operations, achieve Army force capabilities to dominate in complex terrain, improve Army capabilities for strategic responsiveness, improve global force posture, improve capabilities for battle command, improve joint fires capability and improve capabilities for joint logistics. These imperatives will guide how the Army organizes, trains and equips its forces to ensure mastery of the full range of military operations and dominance in armed conflict.

The Army Plan 06-25 specifies that "Readiness Is our Mission" to meet the requirements of our joint Combatant Commanders. Both the Secretary of the Army and the Chief of Staff, Army (CSA) have further stated that individual and unit readiness is a nonnegotiable priority that the Army's training, leader development and education capabilities must enable and support. The Department of Defense's (DOD's) Transformation Planning Guidance (TPG) states, "We must transform not only the capabilities at our disposal, but the very way we think, the way we train, the way we exercise and the way we fight." We are reexamining and challenging our institutional assumptions, paradigms and procedures to better serve our nation. The end result of this examination will be a more relevant and ready force—a campaign-quality Army with a joint and expeditionary mindset. Our Army

will retain the best of its current capabilities and attributes while developing others that increase relevance and readiness to respond in the current and projected strategic and operational environments.

Army Culture

Training and leader development activities take place within the Army's culture—a shared set of beliefs, values and assumptions that define what is most important to Soldiers and leaders. Our culture is ingrained in our new Soldiers and reinforced daily in order to provide a positive framework for everything we do.

Army culture is representative of American society as evidenced by the adoption of the seven Army Values: loyalty, duty, respect, selfless service, honor, integrity and personal courage. These values play a critical role in shaping the beliefs of Soldiers and leaders. Army culture is internalized over time by its members and is reflected in their practices and beliefs.

Values are a nonnegotiable element of Army transformation. A highly complex, nonlinear battlespace will create situations that may at first appear morally ambiguous. To combat this perceived ambiguity, Soldiers and leaders require a solid foundation and regular training in Army Values. This training will ensure that Soldiers and leaders, when confronted with morally uncertain situations, understand what "doing the right thing" means. Army Values will continue to be the foundation of our Army culture.

The Warrior Ethos refers to the professional attitudes and beliefs that characterize the American Soldier. At its core, the Warrior Ethos grounds itself on the refusal to accept failure. The Warrior Ethos requires unrelenting and consistent determination to do what is right and to do it with pride. In whatever conditions Army leaders find themselves, they turn the professional Warrior Ethos into a collective commitment to win with honor. The Warrior Ethos applies to all Soldiers, not just to those who close with and destroy the enemy.

A creed, by its very definition, is a system of principles or beliefs. From an ideological perspective, a creed will help its followers focus on a reason for existing. The Soldier's creed serves to unify all Soldiers and leaders in a common bond. It is the key component to the inculcation of the Warrior Ethos. The creed speaks to the heart of every Soldier and leader. It is the touchstone that keeps Soldiers and leaders leaning forward during times of hardship and adversity and the mantra by which Soldiers and leaders live to fight for one another. The Soldier's creed is the common bond that transcends all distinctions but one, what it means to be a Soldier. The Army civilian creed serves to increase civilians' pride and commitment to the Army team. Civilians are committed to the Army by being technically prepared to meet the challenges of the future and by doing what it takes to accomplish the mission. Civilians possess the unique characteristics of loyalty, dedication and mission orientation that lead most to identify themselves within the Army culture as "Army civilians" rather than "federal civil servants."

Army units operate in battle as part of the Combatant Commander's joint team. Because we fight jointly, we must think, train, educate and exercise jointly. Army culture must embrace its nesting within joint culture. Jointness must be incorporated in every facet of Army culture. Jointness must be a common thread running through all aspects of Army training and leader development.

We remain a standards-based Army. Army culture portrayed in the Army Training and Leader Development Model requires training and leader development to be done to a standard using appropriate doctrine. Training and leader development are not time-based activities. Units, leaders and individuals train to standard on their assigned missions. Commanders and NCOs are held responsible for assuring their Soldiers and units meet these standards.

Future Force

Future force Soldiers and leaders will form the core of lethal and effective units capable of exploiting information dominance and employing warfighting systems of systems to meet the future force requirements. They will be highly trained to be strategically responsive, deployable, agile, versatile, lethal, survivable and sustainable across the entire spectrum of military operations. Soldiers and leaders will be confident and competent, and capable of rapid synthesis and assessment of information and immediate situational understanding.

The future force will require units trained to rapidly transition from one mission to the next and conduct mission planning en route while assembling a task organization tailored into force packages for mission execution. Commanders and battle staffs must be trained to see and understand the battlespace. Every Soldier must be a sensor to provide actionable intelligence. Organizations need to be skilled at the rapid collection and fusion of information from manned/unmanned systems coupled with human intelligence (HUMINT) that enables situational understanding and decisive operations. Commanders and battle staffs must synchronize and integrate joint fires to allow future force units to mass effects at the critical place and time.

The training environment will need to approximate the operational environment. Our modernization effort requires transforming initial military training, civilian training, leader development for military and civilians, and professional military education. Additionally, we need to embed training capabilities into our operational platforms and resource the institution to meet requirements mandated by the force. Live-virtual-constructive (LVC) training capabilities must be integrated and linked to joint training capabilities. At end state, our Army will employ training capabilities with seamless links between training institutions, home station, combat training centers and deployed locations. By achieving these capabilities, the Army will be able to train, alert, deploy, employ and execute to meet our nation's complex national security requirements. The difference between operations today and future force operations is a requirement for greatly enhanced doctrine, training and leader development (DTLD) capabilities, enabled by improved processes and an integrated Training Support System (TSS) that supports Soldiers and leaders whenever and wherever required.

With the draw down of our nation's military force, the role of civilians is more critical to the Army's ability to successfully accomplish its missions. Civilians are deployed with Soldiers around the world. Many of these civilians are equipment, supply, telecommunications and quality assurance specialists. Besides these functions, civilians fill other critical roles in forward support of our military troops.

Future Force Concepts and Capabilities

Training and developing the future force Soldier and leader is derived from an assessment of future force warfighting concepts and capabilities. The strategic concepts derived from this analysis are:

- Sustain a doctrine- and standards-based Army
- Be capable of full-spectrum training
- Develop future force Soldiers
- Develop future force leaders

From these concepts, seven strategic capabilities follow, including:

- Develop technologically enabled, highly responsive, flexible, tailored, dynamic knowledge depositories containing observations, insights, lessons, doctrine, tactics, techniques and procedures (TTPs), and training support publications, products, packages and modules
- Embed training tools into operational and institutional system of systems
- Integrate Army LVC training capabilities and link to joint training capabilities
- Make training and training support available on demand
- Link training environments and domains through the infosphere and the Global Information Grid
- Transform initial military training
- Transform Professional Military Education (PME)

Embedded training is a functional capability built into or added onto operational equipment and systems. The goal is to provide a multi-echelon virtual and constructive training capability to support individual, crew, leader and distributed collective training using built-in operational interfaces. Through embedded training and deployable training infrastructure, forces will be able to train globally and manage and assess readiness regardless of location or duration of deployed operations. It will function through a joint architecture using common standards within integrated LVC training systems. Embedded training supports training, assessment and control of exercises on the operational equipment with auxiliary equipment and data sources as necessary.

Embedded training in Army acquisition programs must be designed and fielded to integrate immediately into the Global Joint Training Infrastructure, which includes architectural standards, range instrumentation, simulators and simulations, and communications to support distributed live, virtual, and constructive connectivity. Deployed forces must have the ability to sustain readiness through training and rehearsal, regardless of location or length of deployment. Embedded training capabilities will be consistent with joint operational and joint training architectures, and will be achieved using real-world command and control systems.

Army centers and schools will continue to train and educate Soldiers and leaders. During initial military training, centers and schools will continue to train new recruits and officers, instilling Army Values, the Warrior Ethos and Soldier's Creed, and preparing them for their operational assignments. Centers and schools will continue to develop leaders through NCO, WO and officer education programs. Additionally, in times of crisis and need for Army expansion, centers and schools will remain vital to the mobilization requirements of the Army.

Technical training, the new civilian education system, and advanced education, combined with experiential development provide the multi-skilled leaders with values, attributes, versatility and agility to operate effectively in future challenging and complex missions.

The goal of unit training is mission readiness. Field commanders will continue to employ the principles of Army training to ensure proficiency on mission-essential tasks. Training will be standards-based and will prepare units to operate in a joint, interagency, intergovernmental, and multinational (JIIM) environment. The intent will be to provide leaders and Soldiers with a realistic, operationally relevant training capability that can replicate the full spectrum of operations. Meeting these requirements will require an integrated TSS that will link Soldiers and leaders to the centers and schools and the Combat Training Centers (CTCs) through a Global Information Infostructure (GII).

Training and Leader Development

Leader development is the deliberate, continuous, sequential and progressive process, based on Army Values, which develops Soldiers and civilians into competent and confident leaders capable of decisive action. Closing the gap between training, leader development and battlefield performance has always been the critical challenge for any army. In an era of complex national security requirements, the Army's strategic responsibilities now encompass a wider range of missions that present even greater challenges to our leaders. These full-spectrum operations will include combined arms and JIIM considerations.

Leader development is accomplished through a lifelong learning process that takes place through operational experience in the unit, the institutional Army (schools and training centers), and through self-development. The focus of leader development is the future —the preparation of Soldiers and civilians for successive levels of leadership responsibility. Leader development is the mechanism by which the Army grows leaders at all levels to provide purpose, direction and motivation to the force and all its components. When done well, leaders will be equipped intellectually and endowed with the competence to meet the many and uncertain challenges of the contemporary operational environment.

The Army Training and Leader Development Model identifies an important interaction that trains Soldiers and civilians now and develops leaders for the future. Leader development is a lifelong learning process. The three core domains that shape the critical learning experiences throughout a Soldier's, civilian's or leader's career are operational, institutional and self-development. These domains exist within an Army culture bound by distinct values, standards, ethics and the Warrior Ethos. Focused on the Soldier, these domains interact using feedback and assessment from various sources and methods, including counseling and mentoring, to maximize technical and tactical competence and, ultimately, warfighting readi-

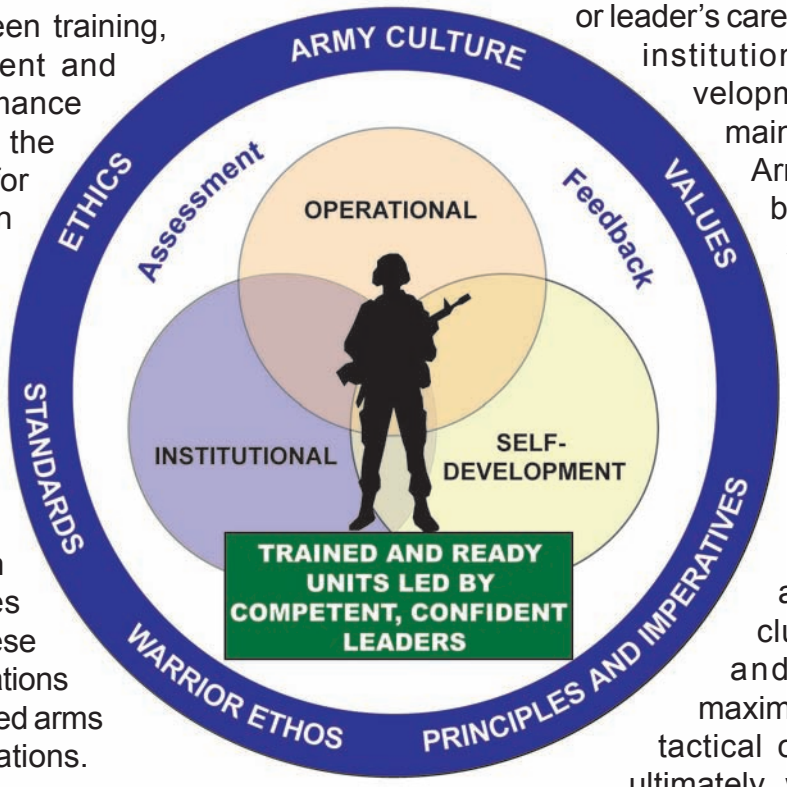


Figure C-1. Leader Development

ness. Each domain has specific, measurable actions that must occur to develop our leaders.

In the operational domain, leader development is accomplished in units and organizations through individual and collective training at home station, during major/joint training exercises, through CTC program participation, while conducting full-spectrum operations, and through the mentoring received at every level of command. In this domain, leader development is facilitated by individual commitment and chain of command support to self-development, and filling gaps in leader skills, knowledge and attributes as identified through individual and chain-of-command assessment and feedback systems. As we transform to a modular, expeditionary force, common standard operating procedures (SOPs) among like units will be necessary to facilitate the expeditionary aspect of the modular force, since commanders must know how the modules that are joining them will operate.

The institutional domain provides standards-based training and education from individual through collective training. Instruction for current and future leaders will instill them with a Warrior Ethos and a common doctrinal foundation. Institutional training focuses on educating and training Soldiers, civilians and leaders on the key skills, knowledge and attributes required to operate in any environment. It includes individual, unit and joint schools and advanced civilian and military education.

The self-development domain is a standards-based, feedback-driven program of activities and learning that contributes to professional competence, organizational effectiveness and personal development. It is a program driven by the individual and the mentoring of superiors. This includes individual and organizational assessment and feedback programs in the operational and institutional domains linked to self-development activities. Throughout this lifelong learning and experience process, there are formal and informal assessments and feedback of performance to prepare leaders for their next level of responsibility. Assessment is the method used to determine the proficiency and potential of leaders, and the feedback must be clear, formative guidance directly related to the outcome of training events measured against standards.

One mandate of Army transformation is to ensure the link between training and leader development is well understood in order to prepare Army leaders for full-spectrum operations. Linking these two fundamental obligations commits the Army to training Soldiers and civilians while developing them into leaders. Training and leader development is a team effort, and the Army has a role that contributes to force readiness. For example, the institutional Army, which includes schools, training centers, combat training centers and PME programs, trains Soldiers and leaders to take their places in Army units by teaching both doctrine and TTPs. Other examples are operational deployments and major training opportunities such as CTCs, CTC exportable training, joint exercises, and mission rehearsal exercises (MRXs)/mission readiness exercises (MREs). They provide rigorous, realistic, and stressful training and operational experience under actual or simulated conditions to enhance unit readiness and produce bold, innovative leaders.

Through the proper balance of unit experiences, training and education at all levels, we must produce leaders who are decisive, innovative, adaptive, culturally astute and effective communicators. This balance is

dynamic and continually adjusted based on future force needs. In addition to being experts in the art and science of the profession of arms and demonstrating character and integrity in everything they do, our leaders must be astute at building teams, boldly confronting uncertainty and solving complex problems while engendering loyalty and trust. Above all, our future senior leaders must be strategic and creative thinkers dedicated to lifelong learning. Only through that commitment will we develop leaders thoroughly comfortable in leading, managing and changing large organizations as well as skilled in governance, statesmanship and diplomacy.

Civilian Leader Development

The Army requires committed civilian leaders who are fully capable and add immediate and sustained value to their organizations through high levels of performance that is linked to their organizations' visions, goals and objectives. Civilian leaders have more responsibility and a greater leadership role in the transformed Army as military positions in the institutional Army are civilianized. This requires a robust civilian leader development program, which is directly linked to readiness.

To ensure Army civilian training and leader development is a high priority, proponency for civilian leader development was transferred to Army G-3 and a civilian leader development division was created. The mission of the division is to ensure the Army provides training, education and operational experiences to develop leader competencies and enhance capabilities of Army civilians in support of Soldiers, the Army and the nation. The division monitors the implementation of the Army Training and Leader Development—Civilian Implementation Plan for pace of completion, senior leader involvement and funding. G-3 proponency for civilian leader development brings about a significant change in culture as the Army moves toward greater integration of civilians within the uniformed force. The oversight of civilian leader development training and related policy issues dictates that the G-3 remains cognizant of all issues and actions that impact Army training.

The Civilian Education System, Defense Leadership and Management Program, and Senior Service College educate civilians with the necessary knowledge, skills, abilities and behaviors to confidently and effectively operate amidst the complexities and challenges of the 21st century national security environment.

Civilian Education System (CES) Leader Development Program (LD)

The CES Leader Development Program is a new leader-development program being prepared for Army civilians. CES is based on leadership competencies derived from Office of Personnel Management competencies and leader competencies identified by the Center for Army Leadership in the emerging *FM 6-22, Army Leadership*. The CES LD program is a structured, progressive and sequential program which broadens the targeted civilian educational training base, develops leader training and education that supports civilian leader career path requirements and professional development, and establishes lifelong learning and self development as integral parts of all civilian training programs.

The CES LD program includes an orientation course and three levels of leader development education. CES LD program architecture includes distributed learning modules, followed by resident courses, to achieve essential learning outcomes that support our emerging lifelong learning policy. The design, resourcing and implementation of the CES LD

program are the major supporting elements for implementing the desired civilian leader development end state. Implementation of the CES LD program will produce multi-skilled leaders with values, attributes, versatility and agility to operate effectively. The CES policies will support this system to ensure leaders achieve the right balance of education and training. Senior Service College and the Defense Leadership and Management Program are opportunities for civilians beyond the CES advanced level to assist in development for Senior Executive Service level positions.

Experiences

Experiential development is a critical element in developing leaders. Assignments that promote confidence, innovation, and creative and critical thinking complement institutional training and will aid in growing leaders. Policy must address leaders expanding their knowledge base through experiences. Experiential learning through real work experiences such as rotational/developmental assignments, complementary experiences, deployments, or crossover type experiences in other functions will provide Army civilians with a greater knowledge of how the Army operates. Leaders who operate in a broader framework tend to adapt to processes and solve problems more easily.

Senior Service College (SSC)

SSC is at the apex of a civilian's leader development education and prepares civilians for positions of greatest responsibility. SSC attendance is available by competitive process for civilians who require an understanding of complex policy and operational challenges and increased knowledge of the national security mission. Upon graduation from SSC, civilians are assigned to positions of greater responsibility in another organization, which enhances their leader development experience.

Defense Leadership and Management Program (DLAMP)

DLAMP is the premier DOD executive development program for senior Defense civilians and a key component of the DOD succession planning strategy. DLAMP provides the means to mature a cadre of highly capable senior civilian leaders with a joint perspective on managing the department's workforce and programs. The goal of DLAMP is to develop senior civilian leaders with a DOD-wide perspective; substantive knowledge of the national security mission; a shared understanding, trust and sense of mission with military counterparts; and strong leadership and management skills.

DLAMP is a comprehensive program of education and development. Core elements include an advanced degree from an accredited institution, graduate courses in business management and public policy areas, SSC, and leadership courses designed to enhance executive core qualifications. Although there is no guarantee of advancement, DLAMP, when combined with increasingly responsible work assignments, prepares individuals for senior leadership positions throughout DOD.

Professional Military Education

The Army requires Soldiers and leaders, steeped in the warfighting capabilities and doctrine, to be knowledgeable and experienced in how to analyze the ability of their units to operate and sustain themselves on the battlefield. Warfighting modules will teach leaders standard U.S. Army techniques and procedures for tactical decision making and the tactical employment of companies, battalions and brigades in combined arms,

full-spectrum operations. Warfighting training will be tactically focused, hands-on and execution-oriented, and will culminate with an exercise that stresses and develops the leaders' ability to rapidly make decisions and to apply the elements of combat power within the operational framework of full-spectrum operations. The intent of the warfighting curriculum is to produce leaders who are highly skilled in combined arms maneuver, support and sustainment of companies, battalions and brigades as part of the joint team.

Officer Education System (OES)

The Officer Education System (OES) is being adapted to meet the needs of the transforming Army and the realities of the contemporary operating environment (COE). We have begun to adapt instructions to include the new operational environment and will gradually expand this to incorporate all programs of instruction (POIs) and training scenarios. The Army requires leaders who are able to manage training in order to prepare their unit for operations. Leaders must understand the development of a Mission Essential Task List (METL) as well as the entire Army training management cycle and the other tenets set forth in *FM 7-0, Training the Force*, and *FM 7-1, Battle Focused Training*.

The Army will develop a single world-class leadership development education system with distinct components for warrant officers, company grade, and field grade officers. Ultimately, the Army will combine warrant officer, company grade, and field grade officer training, as appropriate, wherever required common officer skills are taught.

Basic Officer Leader Course

The Basic Officer Leader Course (BOLC) incorporates recommendations from the Army Training and Leader Development Officer Panel and the OES Needs Analysis Study. It transforms precommissioning, pre-appointment, and officer basic courses to better prepare second lieutenants and warrant officers (WO1) to achieve success in the COE immediately upon arrival in their first unit. The objective is to develop technically competent, confident and adaptable platoon leaders grounded in leadership and field craft, regardless of branch, who embody the Army Values and the Warrior Ethos and who are physically and mentally strong. To achieve this objective, BOLC capitalizes on experience-based training, logically structured to build upon and reemphasize previous lessons learned.

Phase I (Precommissioning/Preappointment). The traditional commissioning and appointment sources are revising their curricula to train and educate the majority of performance tasks (basic Soldier and leader skills) commonly performed by all lieutenants and WO1s. Each officer candidate, warrant officer candidate or cadet, regardless of commissioning or appointment source, will be trained using the same standards and POIs. They will be steeped in the values and traditions of the Army, and will possess a clearer knowledge of what it means to be an officer.

Phase II (Experiential Leader Training). Upon graduation/commissioning, lieutenants attend the second, branch-immaterial phase of BOLC. This course is physically and mentally challenging, with 80 percent of the training conducted hands-on in a tactical or field environment. The platoon is the focal point for all activities, as each student is evaluated in a series of leadership positions under varying conditions/situations. A highly trained cadre of officers and NCOs continually assess the performance of and counsels each student. Officer students also participate in several peer reviews and self-assessments.

The curricula includes advanced land navigation training; rifle marksmanship; weapons familiarization; practical exercises in leadership; chemical, biological, radiological and nuclear (CBRN) operations; and use of night vision equipment. It culminates in squad and platoon situational-training exercises using COE scenarios (including urban terrain and convoy operations). Students also complete several confidence courses containing obstacles that challenge students to overcome personal fears. Officers depart BOLC II with greater confidence, an increased appreciation for the branches of the combined arms, and a clearer picture of their personal strengths and weaknesses. To date, four highly successful pilot courses have been conducted. To implement the recommendations of the Army Training and Leader Development Panel, newly appointed warrant officers (WO1) participated in the BOLC II pilot course program. Full integration of WO1s into BOLC II is being studied.

Phase III (Branch Specific Training). After gaining confidence in their abilities to lead small units, officers are prepared to learn the specialized skills, doctrine, tactics and techniques associated with their specific branch. Upon graduation, officers will proceed to their first unit or attend additional assignment-specific training (airborne, Ranger, language school, etc.).

Curriculum refinement for the BOLC pilot program will continue in FY06, reflecting the needs of the Army and recommendations from graduates. When implemented, BOLC will provide the institutional training and education required to develop the high-quality officers needed to lead the future force.

Warrant Officer Basic Course (Branch Specific Training) is a functional specialty development course taught at various proponent schools that prepares newly appointed officers for their assignments as WO1s. Training focuses on technical skills and leadership. Needs analyses of the current 15 Warrant Officer Basic Courses are being conducted to validate existing training and education programs, determine future requirements, and identify opportunities for integration with officer basic courses.

Captains Professional Military Education (PME) is being redesigned based on feedback from numerous survey results, determination of needs for training in specific training and directives from higher authorities. Transformation of captains education will more fully prepare the professional company grade officer for success in the COE. Analysis of the data indicates that emphasis is needed on assignment-tailored training focusing on specific primary staff positions, realistic scenario-driven command training, and available options to allow officers to attend the Captains Career Course with minimal time away from the family. Future Captains PME will feature:

- Full-spectrum, operations-based agile leader development
- Emphasis on the importance of living the Warrior Ethos
- Branch and combined arms focus
- Introduction to joint, interagency, intergovernmental and multinational operations
- Knowledge of and skills in branch-related digital systems
- Understanding of the effects of cultural awareness on military operations
- Leverage learning technologies
- Potential options for attendance in PCS or TDY status

- Synchronized to support the Modular Force initiative and the Army Force Generation (ARFORGEN) model

The redesign of Captains PME currently underway requires branches to update task analyses of all company commander and staff officer positions. This leads to determining which common core and branch technical Terminal Learning Objectives must be developed/revised for instruction, with validation and quality assurance of all present Captains Career Courses following. The methods of instruction are being reevaluated to promote a realistic, hands-on experience to stimulate better recall during all situations, most importantly in a combat environment. The end state is a Captains PME that prepares captains to function in the COE, making them more productive and contributing to decisive mission accomplishment.

Warrant Officer Advanced Course (Branch-specific Training) focuses on tactical and technical skills, and leadership at company, battalion and above. The 15 proponents that administer WOAC are conducting formal needs analyses to validate existing training and education systems, determine future requirements, and identify opportunities to integrate WOAC with Captain's PME.

Intermediate Level Education (ILE) consists of two phases: the core curriculum course and the qualification course. The core course is a 13-week military education level (MEL) 4 awarding course (similar to term I of Command and General Staff Officer Course (CGSOC)) for officers in the four career fields. A 28-week qualification course (similar to terms II and III of CGSOC) is being developed by CGSC for officers in the operations career field. Each functional area (FA) in the other three career fields will conduct individual qualification courses ranging from two to 178 weeks in length. The core course provides Army officers a common MEL 4 education and Joint Professional Military Education (JPME) I credit; qualification courses prepare officers for duties in their respective career field or FA. International military students (IMS) will continue to join their U.S. counterparts in most OES and ILE courses (core and FA).

Army War College. The Army War College is the Senior Service College for the Army. It prepares officers and civilians for senior leadership in the Army, Defense, and related departments and agencies by professional military education in national security affairs, with emphasis on the development and employment of military forces in land warfare. The course provides graduates a common MEL1 education and JPME II credit. The resident course lasts 44 weeks. Its parallel is a corresponding studies version which takes two years and includes two two-week resident phases. Graduates are granted masters degrees in strategic studies.

Pre-Command Course (PCC). Commanders selected for battalion and brigade command attend the PCC prior to assuming their assignments. Officers attend a one- to two-week course conducted by their branch. Here, the command designees receive necessary branch technical and tactical training. The designees then attend a one-week course conducted at Fort Leavenworth, KS, that includes command team training for the commander and spouse. Selected command designees are then enrolled in the two-week Tactical Commanders' Development Program, a course that focuses on synchronization on the battlefield. Designees may also attend legal, logistics, and language training as their requirements dictate.

Warrant Officer Staff Course (WOSC) is a four-week, MEL 4 awarding, resident course

focused on staff officer and leadership skills at battalion and above. The WOSC educates CW3s and CW4s in adaptive leadership, cultural awareness, contemporary operating environment, communication, staff skills, critical/creative problem solving and decision making to support the full spectrum of Army operations. The WOSC is undergoing a needs analysis to validate training and education, determine future requirements, and identify opportunities to integrate Warrant Officer MEL 4 with ILE.

Warrant Officer Senior Staff Course (WOSSC) is a two-week, MEL 1 awarding, resident course. WOSSC is the capstone course for warrant officer PME, and provides a master-level officer with broad Army-level perspective required for assignment to CW5 positions as technical, functional, and branch systems integrators and trainers at the tactical, operational and limited strategic levels in the JIIM. WOSSC focuses on "how the Army runs," relevant Army policies, programs and special items of interest. WOSSC is currently undergoing a needs analysis to validate training and education requirements, determine future requirements and identify elements of the Army War College curriculum to include or replicate.

NCO Education System (NCOES)

NCOES is changing to develop leaders for current and future requirements of the Army and the Joint Force, within the context of an Army at war, modularity, force stabilization, and joint and expeditionary capabilities. NCOES is changing to reinforce the Warrior Ethos, address lessons learned in recent operations, cultural awareness, and introduce digitization. Lessons learned have been integrated into the new design in the form of warrior tasks and drills, combat veteran experiences, observations and analyses of operations, and products from the Center for Army Lessons Learned (CALL). The Army Training and Doctrine Command (TRADOC) has also conducted a review of course lengths, timing and common core instruction to determine relevancy and eliminate redundancies.

Warrior Leader Course. The Primary Leadership Development Course (PLDC) has been renamed the Warrior Leader Course. The effect of this change is not only reflected in the name, but also in the course. The new WLC has been redesigned into a course that is unrecognizable from the old PLDC, and the curriculum of the WLC has been revitalized to meet the needs of Soldiers of the future.

The WLC is now tailored to our COE and the time in which we live. Every student now receives detailed squad-level combat leader training. This learner-centered and outcome-based approach reinforces small unit TTPs. The course incorporates recent lessons learned. With this, the course constantly adapts to world threats by incorporating the experience from the battlefield. Combat skills are trained and reinforced upon arrival by the inclusion of weapons immersion. This combat focus culminates in the 96-hour Situational Training Exercise (STX). The nine battle drills and 39 warrior tasks are the framework driving the planning, preparation, rehearsal and execution of all squad operations. This STX is competency-based, battle-focused, combat scenario, and troop-leading procedure driven. Training and evaluation as a combat leader now applies to every Soldier. Evaluation is centered on their ability to demonstrate troop-leading procedures in current threat-based scenarios.

Basic NCO Course (BNCOC)—Educating the Section and Squad Leader. At the SGT/SGT(P) level, we will continue to develop leaders who are masters of their military occu-

pational specialties (MOSs) as well as expert trainers and training managers. At this level, we will continue to focus on leading and training inside the platoon formation and providing the initial exposure to core staff skills needed inside the battalion formation. We will provide training on:

- Creating SGT/SGT(P) with cognitive thinking skills who are adaptive self-aware agile leaders
- Developing defined cultural awareness learning processes linked to the COE
- Providing performance-based training using the concept of leader labs
- Focusing on leading and training within platoons, sections and squads
- Common core, self-development and enhanced MOS technical and tactical skills
- Applying and sustaining lessons learned from the COE
- Executing multi-echelon, shared training events with other ranks
- Providing basic MOS specific staff skills needed in the battalion and brigade tactical operations centers (TOCs)

Advanced NCO Course (ANCOC)—Educating the Platoon Sergeant. At the SSG/SFC level, the focus needs to expand from MOS-specific training to the battlefield operating system. The focus becomes leading and training inside the company formation and expanding the NCO's staff skills to those needed inside the brigade formation. The officer-NCO relationship receives more attention at this level. At this level, we will train on:

- Creating an SSG/SSG(P) with the required skills to perform the duties of a platoon sergeant or staff NCO
- Developing cultural awareness learning processes linked to the COE
- MOS-specific skills
- Leading and training the platoon and function on the battalion staff
- Expanded operational terms, graphics, and specific MOS battle staff skills at the battalion and brigade levels
- Leading and training inside the company and platoon formation and the relationship to the company team and battalion task force
- More multi-echelon, common/shared training events with other ranks
- Skills, knowledge and attributes that foster conceptual thinking and reasoning
- Officer-NCO relationship inside the company/battery/troop

Educating the Battle Staff NCO—Battle Staff Course. A Battle Staff Course curriculum that provides the Army an NCO capable of conducting battalion/brigade/unit of execution level operational skills combined with performing in a joint or combined force land command. The battle staff NCO will have the ability to function on staffs in multiple environments or serve on several subcomponents of given units within or outside the organization.

Course content will draw from NCOES those skills to sustain a sequential and progressive flow with the lower and higher learning levels. It contains integrated training, eliminates redundancy and achieves the following objectives:

- Expanded battle skills at the brigade and higher levels, joint and multinational commands and relationships

- Expansion of cultural awareness, antiterrorism, and function of each component of the Brigade Combat Teams (BCTs)
- Shared training events with the CTCs and proponents
- Skills, knowledge and attitudes that foster conceptual thinking and reasoning
- Focus on officer-NCO functions inside the TOC at all levels
- CBT, CSS and CS integration with expanded digital performance-oriented training
- Missions, functions and organizations of multicomponent/national units
- Application of lessons learned in operations planning with dynamic scenarios
- Threat identification and planning

Educating the First Sergeant. Course curriculum provides the Army a first sergeant capable of conducting company-level operations in multiple environments. The first sergeant will have the ability to function in the contemporary operating environment providing input for the coordination of combat, combat support, and combat service support efforts at echelons above company. The course contains deliberate, guided self-development specified by component (reserve, National Guard (NG) and active) to facilitate the administrative needs of each organization. A warfighter focus achieves the following objectives:

- Warrior focus: CBT, CSS and CS integration
- Digital performance-oriented training
- Combat operations
- Specified component focus
- How to integrate warrior tasks and drills into the company training plan
- Expansion of cultural awareness
- Skills, knowledge and attitudes that foster conceptual thinking and reasoning
- Joint relationships
- Application of lessons learned with dynamic scenarios
- Force protection

Sergeant Major Course (SMC)—Educating the MSG/SGM/CSM. The capstone of NCOES continues to be the Sergeant Major Course. The SMC will transform to meet the senior NCO professional development requirements of the Modular Force and an Army at war. It will foster the leadership skills to develop adaptive leaders within assigned organizations, and provide mastery of training management and conceptual learning skills. This capstone course of NCOES will remain sequential, progressive, vertically and horizontally integrated, dynamic and relevant, and achieve the following objectives:

- Determine cultural awareness learning processes linked to the contemporary operating environment
- Advanced operations skills at the BCT through corps levels with joint capabilities.
- Determine strategy and plans for warrior tasks and drills
- How to lead and train at battalion and above
- Skills, knowledge and attitudes that foster conceptual thinking and reasoning
- Process application of lessons learned

- Internal specialty (CS, CSS and CA) tracks to meet projected assignment
- Force Management Program (How the Army runs)
- Shared training where curriculum aligns with SMC and Intermediate Level Education (ILE)
- Joint relationships

Army Distributed Learning

Distributed Learning (DL) is the delivery of training to Soldiers and units through multiple means and technologies. DL provides students, leaders and units with access to essential information and training anytime and anywhere. It represents a powerful capability in which the proper balance of course content and delivery technologies are provided when and where they will have the greatest impact on force readiness.

The Army Distributed Learning Program (TADLP) is a Department of the Army (DA) program that was approved for implementation in 1996. TADLP is funded for FY98-11 to field and operate digital training facilities (DTF), deployed digital training campuses (DDTC), Army National Guard (ARNG) DL classrooms, the Army Learning Management System (ALMS), and the redesign of selected Army training and education materials for DL delivery. The mission of TADLP is to improve training, enhance force readiness and support Army transformation by exploiting current and emerging technologies to facilitate the development of self-aware and adaptive leaders through lifelong learning, and the delivery of the right training and education to the right Soldier and leader at the right time and place. The TADLP Campaign Plan contains the requirements, policies and management tasks to ensure the program's support of Army readiness.

Infrastructure. TADLP is an approved Army program that is integrated with the Army RC. TADLP infrastructure provides learners with access to individual computers, video-tele-training technology, and other technologies needed for learning in a DL environment leveraging the Army network architecture. TADLP DTFs and ARNG DL classrooms have been fielded throughout CONUS and OCONUS to provide access to 95 percent of the force (AC and RC).

Courseware. Selected courses are being redesigned to provide DL training phases, modules and individual tasks, allowing students to participate in synchronous and asynchronous interactive multimedia training. Selection of courses for DL redesign is based on Army readiness requirements, priorities of the COE, and high-level interest of senior Army leaders. Under the current plan, over 525 courses will be redesigned for DL delivery by FY11. TADLP is currently moving to task-based DL products, which will facilitate quicker production, higher relevance to COE, and much broader reusability in the Army and throughout DOD.

Classroom XXI Program (CRXXI). CRXXI provides training modernization that enhances TADLP Digital Training Facilities at Army resident schools. This program improves training provided through the schools and allows the broadcast of training to remote TADLP DTFs. Also, CRXXI establishes Army standards for instructional technology capabilities that are Soldier-centered and design and architectural standards for classrooms. CRXXI is scheduled for completion by the end of FY14, with a total of 270 classrooms to be fielded.

Self-Development

The Army must have Soldiers and leaders who continually seek to improve their knowledge, skills and abilities. Self-development initiatives contribute to a leader's development by focusing on maximizing strengths, minimizing weaknesses, and ensuring that professional and personal goals, needs, and objectives are realized. Self-development is a continual, career-long process. It takes place during institutional training and development and during operational assignments, and should stretch and broaden the leader beyond the job or training requirements. Self-study, professional reading programs and civilian education courses support the individual's developmental goals. Self-development supports the requirement for all leaders to be self-aware—to know their strengths and weaknesses in order to take the necessary steps to improve their skills, knowledge and attributes.

Figure C-2. Soldier and Leader Development

The focus of self-development is twofold: to fill individual Soldier or leader training, experience and education voids; and to ensure the Soldier meets personal and professional goals. The individual self-development portion of the leader development program is a joint venture between the individual and his or her chain of command.

Self-development is empowered by individuals' acceptance and commitment to lifelong learning wherever they are located. Lifelong learning fills knowledge gaps and provides greater depth and breath of knowledge that educational and operational experiences do not provide. The single most critical element of lifelong learning is feedback. Feedback sets the basis for increasing self-awareness and identifying individual Soldier and leader developmental needs. This strategy must integrate training and education content and materials with operational experiences, assessments and feedback to ensure effective learning of required skills, knowledge and attributes.

Operational Experience

The Army exists to provide trained and ready forces to Combatant Commanders. Each unit commander is primarily responsible to ensure his unit can perform as directed. When given a directed mission, the commander adjusts his unit's Mission Essential Task List (METL) and training to focus on the directed mission. In absence of a directed mission, the commander prepares his unit to perform those core METL tasks that enable his unit to respond as doctrinally designed to missions from across the range of military operations in the contemporary operating environment. Army-approved training strategies for different types of units (i.e., Combined Arms Train-

ing Strategies and Army Weapons Training Strategies) enable the commander to train on mission essential tasks by defining the training events that the Army will support with resources. Life-cycle units, in particular, closely follow Army-approved training strategies during their train-up period to ensure the unit builds proficiency and is validated for deployment/employment within requisite time lines.

The Army training system must continue to enhance its capability to focus support of units that have received a directed mission, are preparing to deploy, or have deployed. The training support system must fully service the directed mission at the unit's home station; at mobilization sites; at the unit's mission rehearsal exercise location; at power generation/support platforms; at theater reception, staging, and onward movement locations; and where the unit is employed. Unit leaders must have access to centers of excellence for doctrine and TTPs and to lessons learned by similarly employed forces; must have a user-friendly training management tool that reduces training planning time and allows tracking of all unit training requirements and performance evaluations; must have training support products that enable units to practice mission essential tasks with realistic interaction with other friendly team members and against opposing forces; must be challenged by a mission rehearsal exercise before deploying when circumstances allow; must be able to plan and rehearse missions assigned in theater; must have job aids that enable Soldiers to perform difficult or important tasks to high standard; and must be able to quickly distribute lessons learned from operations and benefit from other units' lessons learned.

Home Station Training

Most time available for units to train occurs while units are at their home station (installations, ARNG armories, USAR centers, and local/regional training areas). Home station is where individual skills and collective proficiency are honed—where unit readiness and cohesion are formed. Because units have a finite amount of time before they must be ready for deployment, home station training must be optimized. Our goal is to provide units the ability to train at home station on the core missions they were doctrinally designed to accomplish across the full range of military operations in a COE with JIIM team members; and then refocus training on a directed mission, if assigned. To accomplish these critical training events and tasks, training must be supported at home stations with an adequate mix of training enablers—ground/air operating funds, LVC training capability, aids, devices, simulations, instrumentation, ammunition, live-fire ranges, and maneuver training areas.

Joint, Interagency, Intergovernmental, Multinational (JIIM) Training

Contemporary operating environments increasingly require seamless integration of JIIM operating elements. Accordingly, the Army is ensuring its training capability is nested within the Joint National Training Capability. Furthermore, Army leader development and training programs are increasingly emphasizing JIIM context.

Deploying units must have the opportunity to practice their directed mission just as they will perform it—within a JIIM context. Units must have the capability to routinely incorporate into mission-focused training events consideration of JIIM planning, command and control and execution. Home station and deployed

training capabilities should provide Soldiers, leaders and battle staffs with the means to conduct training in a JIIM environment. To improve tactical and leader development, common scenarios that allow execution-centric capability for planning and coordinating simultaneous, full-range military operations in JIIM environments are required to enable integrated, constructive, simulation-based training. JIIM context must become the norm during training at the Army's Combat Training Centers. The end state is Army Soldiers, leaders and units fully prepared to effectively and efficiently function within the JIIM team wherever required by coalition operations.

Combat Training Centers

The CTC program is comprised of the Battle Command Training Program (BCTP), Joint Multinational Readiness Center (JMRC) (formerly Combat Maneuver Training Center (CMTC)), Joint Readiness Training Center (JRTC) and National Training Center (NTC), and integrates training for a Joint National Training Capability (JNTC). The CTC rotations remain the Army's capstone training events for battalions, BCTs, divisions, corps and armies. Their focus remains unit readiness and leader development. The primary purpose of the CTCs is to develop ready units and self-aware, adaptive leaders for a directed mission or full-spectrum JIIM operations. CTCs will accomplish this by integrating a contemporary and joint operational environment into all training. This environment will potentially include simultaneous, noncontiguous, and continuous operations in a distributed, global, LVC training capability under a JIIM context. Army units will experience a rigorous fight in offensive, defensive, and stability and support operations against a free-thinking and adaptable opposing force. The battlefield will be fully arrayed to maximize stress on digital C4ISR systems. Complex terrain including urban terrain will be a part of each rotation. Special Operating Forces will be appropriately integrated throughout rotations, as will realistic combat service support play to stress the logistics structure. Deployment tasks will remain an important aspect of each rotation. Instrumented feedback for both formal and informal after action reviews (AARs) will facilitate sharing of lessons learned to unit leaders, home station, institutions and deployed units.

Expanding reach of the CTCs will be necessary to support the increased number of brigades preparing for deployment in a modular Army. Accordingly, the Army will explore development of an exportable CTC capability with deployable instrumentation and AAR enablers.

Training Wherever, Whenever

As discussed above, Soldiers, leaders and units must have the ability to focus and refocus training as their mission is refined or shifts through the train-up/alert/mobilize/deploy/stage/rehearse mission/employ/re-employ cycle. In the future, training functionality will operate within the Army's high-speed and high-capacity backbone communications network providing training support for commanders, staffs and units wherever the unit is located—at home station, deployed or on the move. Integrated network capabilities will enable units to plan, prepare, train, rehearse and execute multiple missions and tasks simultaneously. Training capabilities will provide reachback access to information resources at any level and for any function.

Even after training functionality is fully embedded in communication, equipment and weapon systems, the Army training system must be responsive to the needs of operational commanders by providing required training

Figure C-3. How We Will Train in the Future

products like training support packages that address operational concerns, performance assistance that helps Soldiers meet mission demands, and analysis/ dissemination of lessons learned.

Training Modernization

As the Army continues to reorganize and transform into modular units and field new equipment, training transformation must keep pace, ensuring our Soldiers and leaders can train and maintain the high level of readiness that these new organizations and our National Military Strategy demand. Training transforms people, equipment and organizations into a capable unit. Training modernization provides commanders with the "enablers" required by the Army Training Strategy and the ARFORGEN model to execute Soldier, leader, unit and battle staff training to standard, anytime and anywhere. The Army's training modernization plan is synchronized with the Army Campaign Plan to ensure critical training enablers support transformation and an Army at war.

Training Support System (TSS)

The TSS, generally described in FM 7-0 and FM 7-1, represents the concept for how training enabler resources support the Army Training Strategy, the Combined Arms Training Strategies (CATS), and the execution of training in both AC and RC units while at home station, deployed or at the combat training centers. TSS also describes how enablers support Soldier training in TRADOC schools. More formally, it has been described as a system of systems that provides the networked, integrated, interoperable training support capabilities that are necessary to enable operationally relevant JIM training for Soldiers and units anytime, anywhere. TSS is inextricably linked to the execution of training by providing training products and training services to meet the challenges of training an Army, with a joint and expeditionary mindset undergoing transformation.

Training Support System Products are those tangible, enabling training capabilities that directly support the execution of Soldier, leader and unit collective training at home station, the combat training centers, and while deployed, as well as the enablers that support Soldier training in the institutions. They include training aids, devices, simulations and simulators (TADSS), ranges, training facilities and instrumentation systems.

Training Support System Services provide resources to support installation and unit

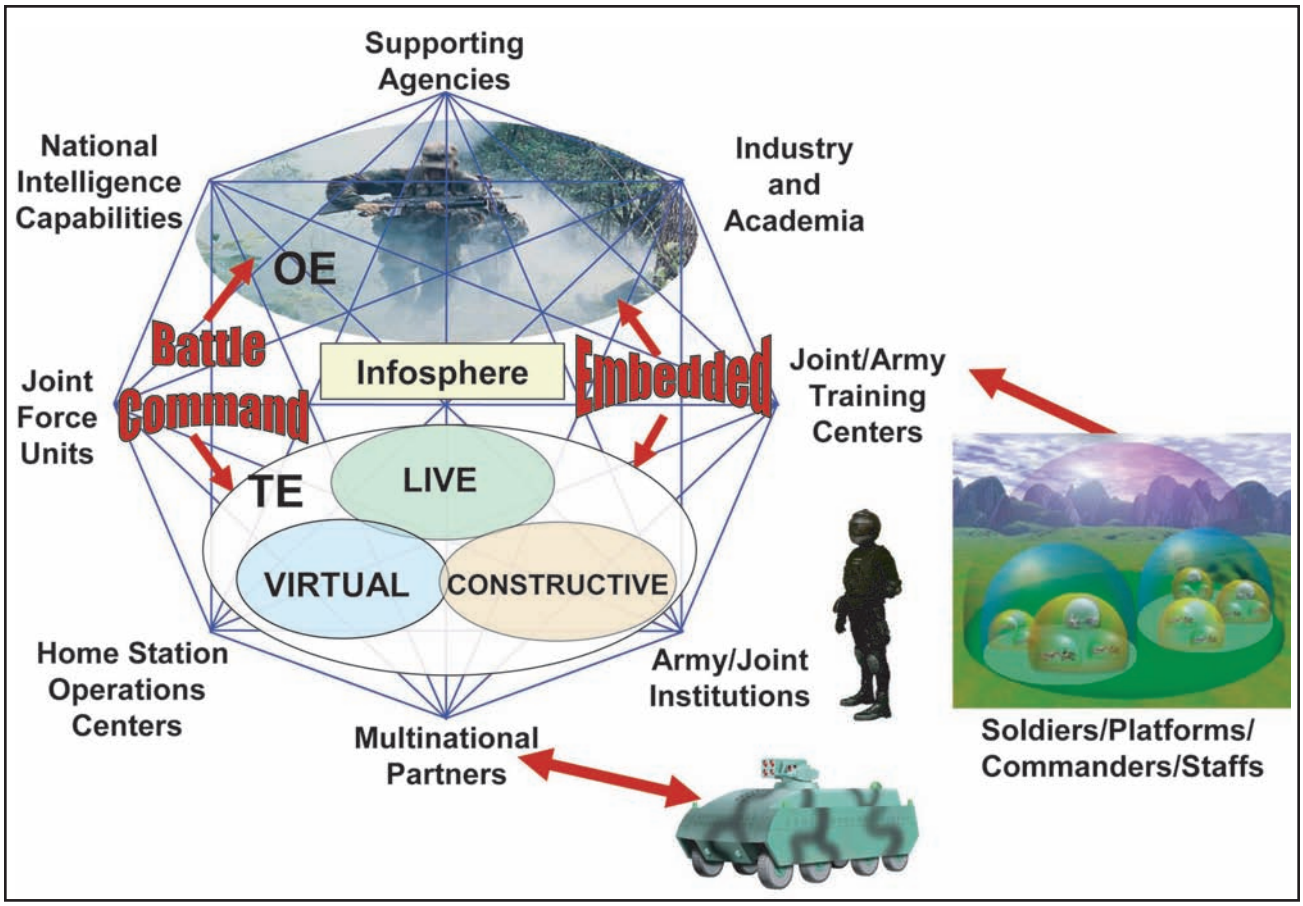


Figure C-4. Future Training Environment

training management and support structure associated with the delivery, operations and maintenance of the training support system products wherever training is conducted. It includes manpower and training support operations required to conduct range operations and maintain training land; the training managers, operators and technicians required to support the operations of simulation and simulator facilities; the training support centers and contract logistic support to sustain fielded training products; and instructors/operators for fielded TADSS. It also provides the means for the integration of products to interoperate in a common training environment.

Training Support System Programs products and services for LVC training are planned, programmed, budgeted and delivered through four major programs, to include: Sustainable Range Program (live); Soldier Training Support Program (live); Battle Command Training Support Program (virtual and constructive); and CTC Modernization (live). Integration of these LVC training capabilities will be achieved with an LVC-IA. TSS programs are managed by the Training Directorate, Army G-3/5/7, supported by lead agents and combat developers at TRADOC Combined Arms Center, Training (CAC-T) and the Army Training Support Center (ATSC).

Sustainable Range Program (SRP)

Live training is the cornerstone of operational success. The Army's Range and Training Land Strategy establishes priorities for investments in the transformation of ranges and training land to support the COE and future force. Key range transformation initiatives,

which include the Digital Range (both DMPRC and DMPTR), Battle Area Complex (BAX), and New Generation Army Targetry Systems (NGATS), are the first range products capable of supporting training the Future Combat Systems (FCS) weapon systems and maintaining the edge for current weapon systems. The instrumentation of the ranges, such as the DMPRC and BAX, is the critical step in testing the networked systems of the FCS-equipped BCT. These specific current force ranges will evolve to the future force range concept being developed by TRADOC.

Range and Training Land Program (RTLP) identifies requirements and provides funds for Army range modernization. RTLP is managed by Army G-3, Training Simulations Division (DAMO-TRS). It provides a range operations and modernization capabilities for the central management, prioritization, planning and programming of live-fire training ranges and maneuver training lands, including the design and construction activities associated with them and the targetry, devices and instrumentation installed on approved Army ranges. The RTLP planning process integrates mission support, environmental stewardship and economic feasibility and defines procedures for determining range projects and training land requirements to support live-fire and maneuver training.

The following are the major sustainable range modernization projects currently programmed, planned and/or being developed.

Army Targetry Systems (ATS)/New Generation Army Targetry Systems (NGATS). ATS provides nondigital, live-fire ranges that incorporate infantry and armor targets, both stationary and moving. ATS portrays realistic threat target scenarios to the Soldier under simulated battlefield conditions. NGATS is the future Army ground targetry system that will provide high-fidelity target signatures, evasive targets, shoot-back capability and remote scoring. Using COTS technology, NGATS will provide a more reliable system at lower cost. NGATS will also be capable of supporting unit training while deployed.

Air Defense Artillery (ADA) Targets provide targets and ancillary devices for ADA live-fire crew weapon qualification and training events currently resourced under the Standards in Training Commission (STRAC). They provide required training and opportunity training to the air defense Soldiers for gun and Stinger missile live fire.

Instrumented/Digital Ranges. The Instrumented/Digital Multi-Purpose Training Range and Range Complex provides modern ranges capable of training and stressing today's Soldiers and their digital equipment. It provides a realistic train-as-you-fight environment, using all available combat systems capabilities and digitally integrating those systems to manage all forces undergoing individual and collective live-fire training and qualification. DMPRC supports Table XII platoon qualification and company combined arms live-fire exercise (CALFEX); DMPTR provides Table VIII crew qualification. BAX is a training range designed to support the BCTs. The BAX will provide the BCT commander with a venue to train the majority of his force in one, or a combination of, linked training facilities. While the layout is typically to support combined arms training scenarios for Heavy BCTs (HBCTs), the individual and crew requirements were incorporated to allow specific weapons platform qualification. Instrumented/digital ranges are part of the Live Training Transformation-Family of Training Systems (LT2-FTS) and have been programmed for all the major installation with HBCTs.

Integrated Military Operations on Urbanized Terrain Training System (I-MTS) provides a melding of three separate but similar thrust efforts into a single program to provide the capability to train units within an urban terrain environment at home station and the combat training centers. These programs are the transition military operations in urban terrain (MOUT) sites, the Combined Arms MOUT Task Force training sites and other MOUT facilities. I-MTS reduces acquisition and sustainment costs, leverages technologies and acquisitions, fosters horizontal technology integration (HTI) through commonalties and standards, synchronizes and integrates the collective efforts of the CTIA by leveraging near-term requirements, and supports the objectives of the Urban Operations Training Strategy.

Battle Effects Simulator (BES) is a propane-charged firing system without pyrotechnics to provide battlefield effects on live fire ranges. Characteristics include 35 shots minimum per charge, excellent thermal signature and versatile audio-visual effects simulator. It can be configured as a weapon firing or a hit effects simulator.

Precision Marksmanship provides for enhanced individual weapons proficiency training in the institutional base and in units. Specific individual weapons type ranges are provided with precision-scoring capability to support basic and specialized skills. The precision marksmanship system supports Modular Force conversion and the global war on terrorism.

Aerial Weapons Scoring System (AWSS) provides a live-fire qualification capability for attack helicopter units. The AWSS is an integrated group of computer-controlled sensors used to score live-fire helicopter gunnery exercises at designated gunnery ranges. AWSS provides near real-time objective scoring results of live-fire exercises conducted from attack helicopters firing .50-caliber, 7.62-, 20- and 30-mm projectiles, and 2.75 inch training rockets. The AWSS also has the capability to objectively score simulated Hellfire missile engagements for helicopters equipped with the Hellfire training missile and laser designator. AWSS supports the aviation modular force conversion and a critical training support system for aviation gunnery.

Deployable Range Packages (DARP) provides a capability for deploying units to conduct live-fire training in theater. It can also be used as Training Augmentation Range Packages (TARP) for MACOMs, the Installation Management Agency (IMA) and theaters to adapt home station ranges, changing live-fire training standards driven by the COE.

Soldier Training Support Programs

Soldier Training Support programs provide training support system capabilities required by the functional (HBCT, IBCT and FIRES) CATS for Soldier and small-unit collective training.

Multiple Integrated Laser Engagement Systems (MILES) Replacement provides tactical engagement simulation for direct-fire, force-on-force training using eye-safe laser "bullets." The MILES replacement program provides a much more adaptable and user-friendly capability than the current MILES system that has been in the inventory for over 25 years. MILES training has proven to dramatically increase the combat readiness and fighting effectiveness of military forces by providing realistic force-on-force engagement simulation. Enhancements include discrete player identification for all participants, enhanced audio-visual cueing effects, increased boresight retention and accuracy,

event recording and display, increased programmability of weapon characteristics, and increased ability to account for side, flank, corner and rear shots.

Engagement Skills Trainer (EST) 2000 is an indoor, multipurpose, multi-lane, small arms, crew-served and individual anti-tank training simulator that trains individual marksmanship; unit collective gunnery and tactical training for static dismounted infantry, scout, engineer, military police squads; and CS/CSS elements. EST 2000 provides the capability to build and sustain marksmanship, squad and team fire distribution and control, and judgmental use of force training using computer-generated imagery. EST 2000 is in production and has been deployed into theater to sustain critical marksmanship training for units that are deployed. It has also been used by deploying units to maintain skills when not conducting live-fire training.

Laser Marksmanship Training System (LMTS) is an eye-safe, laser-based trainer that supports attaining, maintaining and enhancing marksmanship skill proficiency without the use of live fire. LMTS supports direct-fire weapons from handguns through machine guns (M2, M4, M9, M16, M21, M60, M240B, M249, MK19 and AT4). Capabilities include training for basic rifle and pistol marksmanship, machine gun training, counter-sniper training and tactical training, as well as night fighting using night vision devices for all weapons, thermal sights and NBC operations.

One Tactical Engagement Simulation System (OneTESS) provides an increased capability for tactical engagement simulations for all weapon systems. OneTESS is a family of tactical engagement simulation systems that supports force-on-force and force-on-target training exercises at brigade and below, in all battlefield operating systems, at home station, maneuver CTCs and deployed sites. The system will support the training of proper engagement procedures; simulate weapon systems accuracy and effects; and stimulate detectors, sensors, monitors and countermeasures. OneTESS will use a common architecture compliant with the Common Training Instrumentation Architecture (CTIA). The Future Combat Systems will incorporate the OneTESS capability.

Home Station Instrumentation Training System (HITS) is part of the Live Training Transformation Family of Training Systems that will provide an instrumented training capability at home stations in support of the ARFORGEN model. It provides objective data collection of unit performance in force-on-force, force-on-target and live-fire training so units can better assess training. An Initial-HITS (I-HITS) system has been fielded to provide a very limited capability to the field until more funding can be programmed.

Call for Fire Trainer (CFFT) is a collective training system that provides a simulated battlefield for training forward observers at the institutional and unit levels. The system modernizes the current GuardFist capability and can be deployed to support training of deployed forces.

Virtual Helicopter Aircrew Trainer (VHAT) is a virtual training system for helicopter door gunners and nonrated crew members of cargo and utility helicopters in the conduct of door gunnery, sling-load operations, crew coordination, actions on contact, and sectoring and coordinating fires.

Common Gunnery Architecture (CGA) is an initiative that offers an integrated approach to meet common gunnery training requirements. CGA will not combine nor collapse other

systems into a single gunnery trainer; rather it retains system-/platform-specific hardware solutions (thereby continuing to replicate crew operating environments). CGA will standardize the use of such software baselines as One Semi-Automated Forces (OneSAF) Objective System (OOS) and Synthetic Environment Core (SE Core) to enable the training of crews across the full spectrum of operations, in urban and complex terrain, as well as more conventional environments (desert, woodland, etc.) using geo-typical and geo-specific terrain databases. The CGA eliminates the costs and developmental time lines associated with maintaining separate software baselines for each individual system.

Joint Fires and Effects Trainer System (JFETS) is an immersive trainer that has moved from a technology demonstrator to a prototype trainer since September 2004 and trained 4ID and 75th Rangers preparing to deploy to Operation Iraqi Freedom (OIF), and over 700 officers, NCOs, and Soldiers. Soldiers are able to train under conditions that are not achievable in the current generation of simulators. This experience is active, as opposed to passive, and is capable of training the joint fires observer (JFO)—regardless of Service. The system will manipulate visual and physical space to give the observer the experience of being in and surrounded by a specific environment that can be reconfigured. JFETS is composed of four modules: the Urban Terrain Module (UTM), configured to be a room overlooking a middle eastern city; the Open Terrain Module (OTM), configured to represent open desert, or other terrain as needed; the Fires and Effects Command Module (FECM); and the Operational Briefing Area (OBA)/AAR. As common gunnery architecture and OneSAF capabilities spiral, JFETS will be able to connect to training systems across the Services and allow virtual training, both individual and collective.

Battle Command Training Support Programs

Battle Command Training Support Programs provide the virtual and constructive training support systems required by the Army training strategies. Virtual simulators support the gated training strategies by providing commanders the tools to practice on crew and unit collective tasks prior to conducting live training. Constructive simulations provide commanders the capability to train their leaders and battle staffs on Mission Essential Task List through the use of simulations. Both have been used extensively for MRXs.

Battle Command Training Support provides training architectures. Training architectures provide the means to ensure integration and interoperability across TSS product lines and with complementary systems.

Live-Virtual-Constructive–Integrated Architecture (LVC-IA) is a network-centric linkage that collects, retrieves and exchanges simulation data between live instrumentation and simulation systems, virtual simulators and simulations, and constructive simulations (LVC components). Integrating this data creates a holistic, simulated battlespace and conditions created by the contemporary operational environment. In this environment, commanders and their units can train and rehearse mission essential tasks required to gain and maintain skill proficiency in battlespace awareness, force application, focused logistics and protection. LVC-IA is a critical component to training transformation and providing the optimum training environment for the future combat force.

Common Training Instrumentation Architecture (CTIA) is a component-based architecture that uses common standards, interfaces and protocols with other Synthetic Training

Environment (STE) training systems. Along with OneTESS, CTIA provides the foundation of the Army's Live Training Transformation (LT2) product line for training instrumentation systems that support home station (DMPRC, MOUT, force-on-force, etc.), deployed and maneuver CTC live-training requirements. CTIA's common, component-based architecture approach ensures cost-effective modernization and will evolve to support the future force's training requirements. CTIA is the underlying architecture of the LT2-FTS, and it supports Training Transformation (T2).

Army Training Information Architecture (ATIA) is an integrated suite of web-based training applications—DITSCAP-certified at Level 3—that supports the development, storage and delivery, and management of training and training products. Major components of the system currently include the Soldier's Training Homepage, Reimer Digital Library, Training and Doctrine Development Tool (TDDT)/CATS development tool, and selected training resource management and unit training management capabilities.

Fixed Tactical Internet (FTI) is a permanently installed network of Enhanced Position Location Reporting System (EPLRS) radio sets with an EPLRS Network Manager that enables digital communications across the Army's Tactical Internet. The FTI provides the primary means for providing on-demand digital communications in support of testing, training, maintenance and experimentation at brigade and below. The FTI significantly reduces deployment of signal company assets every time a unit goes out to train. It is been fielded to installations fielded with the Stryker, M1A2 and M2A3 vehicles, as well as Fort Benning, Fort Knox and Fort Gordon. FTI does not provide a capability to train with a Blue Force Tracker or other non-EPLRS-based communications systems.

Constructive Simulation Training is the use of computer models and simulations to exercise the command and staff functions of units, from platoon through Joint Task Force. It is the primary means for training BCT and above organizations in the art of warfighting and is used extensively by deploying units for conducting MRXs. Constructive simulations permit multiple echelons of command and staff to execute their normal warfighting tasks in an extensive exercise without the resource constraints of large bodies of troops. It provides a versatile, cost-effective, low-overhead training environment that trains leaders how to visualize the battlespace and to make tactical decisions in a time-constrained, digitized environment. It also provides the "wraparound" for LVC integrated events and extending the battlespace to provide more realistic scenarios. Through the repetitive execution of tactical scenarios followed by AARs, commanders and staff officers gain a comprehensive understanding of the warfighting capability of their units, how their battle staffs synchronize the fight, and how to optimize Army Battle Command System (ABCS) to provide them situational awareness.

Joint Land Component Constructive Training Capability (JLCCTC) formerly known as Army Constructive Training Federation (ACTF) consists of a variety of current and projected simulations and supporting applications and hardware designed to address the training needs of the joint force land component commander (JFLCC) and Army Title X requirements across the range of military operations. The JLCCTC is a federation of simulations/models and the associated software tools required to compose, initialize, operate, tune and maintain a synthetic operational environment to support the conduct of collective command and staff training. The constructive models in the JLCCTC include CBS, Tactical Simulation (TACSIM), Combat

Service Support Training Simulation System (CSSTSS), Joint Conflict and Tactical Simulation (JCATS), Digital BattleStaff Sustainment Trainer (DBST), Warfighter's Simulation (WARSIM), Brigade Battle Simulation (BBS), Joint Nonkinetic Effects Model (JNEM), an AAR tool (currently Vision XXI), the Joint Deployment Logistics Model (JDLM) and OneSAF. JLCCTC supports modular force conversion and T2.

Intelligence Electronic Warfare Tactical Proficiency Trainer (IEWTPT) is a constructive training simulation being fielded to the Army to support military intelligence (MI) units at corps and below. The IEWTPT enables realistic battle command training through the realistic simulation, stimulation and presentation of joint and Army intelligence capabilities. It is designed to stimulate the MI collection system with scenarios that replicate battlefield situations utilizing the overarching constructive simulation as the driver. This puts the MI Soldier in the training loop using the operational equipment and providing the required reports and data to the combat commander and his staff. IEWTPT supports modular force conversion and T2.

Common Battle Command Simulation Equipment (CBCSE) is common off-the-shelf hardware that is used to run the JLCCTC software. It provides a significant improvement for running the simulations over legacy hardware. CBCSE requires replacement every three to five years to maintain relevancy.

One Semi-Automated Forces (OneSAF) is a tailorable and composable next generation Computer Generated Force (CGF) that represents a full range of operations, systems and control process (TTP) from entity to brigade level, having variable level of fidelity; and supports all model and simulation domain applications operating in both human-in-the loop and closed-loop modes. It will represent the physical environment, including urban operations (UO), and its effect on simulated activities and behaviors. OneSAF will be the future entity-level brigade and below constructive simulation, will be a component of the Joint Land Component Constructive Training Capability (JLCCTC), and be used in battle labs and research, development and engineering centers (RDECs).

Battle Command Training Centers (BCTC) provides a turnkey digital training capability to conduct individual and collective training throughout the AC and RC, enabling the commanders to train individual operators, leaders and battle staffs across the full spectrum of operations, to include mission rehearsal and reach capabilities using their go-to-war systems. BCTCs directly support the execution of day-to-day operations and exercise support for all leader and battle staff training required by the CATS, Army and MACOM 350-1 training directives, and Army training strategy to achieve combat readiness in Service, joint and/or combined arms training environments.

Virtual Simulation Training is also part of Battle Command Training Support and is executed on computer-generated battlefields. It provides crews, leaders and units with realistic, immersive training experiences using an embedded training capability or man-in-the-loop simulators that approximate the physical layout of tactical weapon systems and platforms. In the virtual environment, simulators operating on virtual terrain take the place of weapon systems and can be linked to expand the scope of the training event. Virtual training systems provide commanders with "walk-level" training, sustainment training, gated training events, leader development and mission rehearsal capabilities. Through frequent and repetitive use and an immediate

and total replay AAR capability, virtual training systems assist commanders with building and sustaining of training readiness. Virtual training also has the advantage of allowing Soldiers to perform tasks too dangerous for the live environment (such as calling for artillery fires on or near an occupied friendly position), provides the capability for rapid changes to scenarios, and facilitates retraining specific tasks until training objectives are met. Virtual simulations allow repetitive training under varying conditions to enable the individual or team to conduct live training at a higher state of readiness, potentially reducing OPTEMPO costs. The Combined Arms Tactical Trainers (CATT) represent the family of the virtual simulators discussed below.

Synthetic Environment Core (SE Core) is the Army's virtual component of the LVC-IA. It is a program that will integrate the various functions and components of virtual simulations and link the virtual environment to the LVC training environment (TE) to support DOD's training transformation and the Army's training strategy. SE Core will develop new, and integrate existing, software products creating the Army's common virtual environment (CVE), linking system and nonsystem virtual simulations into a fully integrated training capability. The CVE enables the Army to execute combined arms and joint training and mission planning and rehearsals at home station, en route and at deployed locations. SE Core is a key element in the Army's training transformation plan and a complementary training system for the Future Combat Systems.

Close Combat Tactical Trainer (CCTT) is the current force's ground maneuver component of CATT, and is a system of computer-driven, combat vehicle simulators such as the M1 Abrams Tank, the M2 Bradley Fighting Vehicle (BFV), the M3 Cavalry Fighting Vehicle, the Fire Support Team Vehicle, the HMMWV, and emulators that control other vehicle models and that work interactively, similar to the vehicles and functions they simulate. These simulators and emulators are connected via a local area network (LAN). The system's computers create a simulated battlefield that creates the illusion of moving and fighting over actual terrain while operating or riding inside the actual vehicles, and employing the actual weapon systems mounted in or on the vehicles. CCTT is fielded in company/team sets for the AC and mobile platoon sets for the Army National Guard. A Reconfigurable Vehicle Simulator (RVS) and Reconfigurable Vehicle Tactical Trainer (RVTT) have been developed and will be used to support a wider training audience. RVTT's convoy and movement-centric design provides leaders and Soldiers the ability to train highly perishable command and control skills, crew drills and battle drills in a variety of vehicle types in simulated weather, urban operations and complex virtual terrain environments.

Aviation Combined Arms Tactical Trainer (AVCATT) is the aviation component of the CATT that provides a system for staff/crew collective and combined arms training, mission rehearsal and joint exercises. AVCATT will be fair-fight interoperable with Close Combat Tactical Trainer (CCTT), is capable of linking with other AVCATT systems via LAN or wide area network (WAN), can be networked to the Army Tactical Command and Control System (ATCCS) workstations and will be interoperable with future CATT systems. It is a multifunctional aviation training system, tailorable to specific unit needs such as mission planning and rehearsal and combined arms collective training through use of Distributed Interactive Simulation (DIS) protocols and Tactical Simulation Interface Units (TSIUs). AVCATT incorporates current and future force aviation aircraft, including attack helicopters

AH-64A Apache and AH-64D Apache Longbow, armed observation helicopters OH-58D Kiowa Warrior, utility helicopters UH-60A/L/M Black Hawk, cargo helicopters CH-47D/F Chinook, and future Armed Reconnaissance Helicopters. The AVCATT is currently fielded to Fort Rucker, Fort Campbell, Army National Guard Region V (Eastover, SC), United States Army Europe (USAREUR), Fort Stewart, Korea, Fort Hood and Army National Guard Region I (Marana, AZ). The AVCATT is a mobile system that can support unit collective training at multiple sites including home station, CTCs and National Guard training sites. This system supports the aviation modular force conversion.

Soldier Combined Arms Tactical Trainer (S-CATT) is another member of the CATT family and will be designed to support small-unit leader training on critical combat skills prior to executing them in a live training environment. Soldier CATT will be an immersive individual and collective virtual training simulation supporting light infantry, Ranger, Special Operations Forces, BCT, and Land Warrior equipped units. It is required to enable more frequent, repetitive, standards-based training to build and sustain readiness at home station. Soldier CATT combines immersive Soldier and leader simulators called "Virtual Warrior" with PC-based reconfigurable vehicle simulators and dismounted Soldier workstations to support training of dismounted leaders and Soldiers from squad through company with extensions to individual Soldier, leader and battalion echelons. Soldier CATT will replicate the COE and enable training in the full spectrum of operations on urban and complex terrain, as well as more conventional environments (desert, woodland, home stations), using geo-typical and geo-specific terrain databases. Soldier CATT will (1) train "Soldiers as a System," developing confident and adaptive Soldiers and leaders; and (2) support multi-echelon, combined-arms, collective unit/leader training, focused at the squad through company levels.

Virtual Convoy Combat Trainer (VCCT) provides a critical training capability to support unit deployment training in convoy operations prior to deploying into theater. VCCT provides more frequent, repetitive, standards-based training to build and sustain task proficiency on convoy operation tasks. It is a mobile, immersive virtual simulator allowing Soldiers, as part of a vehicle crew, to participate in a convoy of manned and unmanned computer-generated vehicles. Soldiers come under attack in a virtual training environment and must engage the enemy using realistic weapons and correct weapons engagement techniques. Soldiers encounter shoot/don't shoot scenarios and are trained to develop judgment to know when to make the transition. VCCT will enable training on the full spectrum of operations, in urban and complex terrain environments, as well as more conventional environments (desert, woodland, home stations), using geo-typical and geo-specific terrain databases. VCCT will eventually be replaced by a more capable simulator, RVTT. RVTT will reside within the CCTT program, but provide training capabilities to light, medium and heavy forces for all types of vehicles.

Combat Training Centers Modernization Program

Digital After Action Review Tool (DAART) enables the CTC instrumentation system to monitor digitized unit communications and collect digital data to prepare the AAR for digital units. This program is critical in providing a bridge between the current and objective instrumentation systems (OIS). It enables the CTC current instrumentation systems to

collect digital data for the preparation of AARs for ABCS-equipped units.

CTC Battle Command (BC) Security. CTCs are required to connect to ABCS for the purpose of (1) playing the higher headquarters (HICON) and adjacent units; (2) extracting critical information from the ABCS for the purpose of AAR and take-home package (THP) development; (3) maintaining safety during the exercise; (4) and controlling the exercise. Instrumentation and AAR product systems (such as DAART) are currently required to operate in Secret System High (SSH). CTC BC security provides a capability allowing CTC instrumentation and support systems (such as DAART, OIS) to be connected to the rotational unit's ABCS. The increasing use of automated systems to support command and control functions and changes in the regulations concerning information assurance have resulted in new requirements for certification and accreditation of CTC instrumentation and supporting systems. The security environment at each CTC must be significantly upgraded to continue to support realistic training by rotation units. CTC BC security supports modular force conversion.

Objective Instrumentation System (OIS) is based on and compliant with the CTIA and LT2 concepts. The OIS is an upgrade from the current instrumentation system (IS) and will be developed according to the CTIA. The CTIA serves as the common core architecture for the OIS programs, as well as the instrumentation system programs for home stations and the JRTC MOUT facility. The OIS is an integrated system of computer software and hardware, workstations, databases, voice and video recording, production and presentation equipment, interface devices and communication systems. The system is configured to collect, report, store, manage, process and display event data for 2,000 instrumented players with the capability to expand to 10,000 instrumented players.

The OIS will accomplish the following functions: exercise planning, system preparation, exercise management, training performance feedback, and system support.

Deployable IS is designed to support instrumented AARs for units not physically located at a maneuver CTC site.

MOUT Instrumentation System (MOUT IS). Phase 1 of the MOUT-IS provides a basic capability for monitoring and recording audio and video data, within the MOUT complex and in a limited number of buildings, to support AARs for live-fire and force-on-force training exercises. Phase 1 consists of the integration of commercial off-the-shelf (COTS)/nondevelopmental items (NDI) hardware and software components.

NTC Military Operations in Urban Terrain (MOUT) site provides an increased capability to conduct full-spectrum operations/training at the National Training Center (NTC). Currently, NTC has developed and continues to build upon 10 towns (additional towns are used for live-fire purposes) and seven subterranean complexes to train units on urban operations. An additional NTC site, Pioneer Site complex, has been used for Special Operation Forces training. Towns at the NTC are of varying sizes constructed using fabricated "buildings" (mobile MOUT), sheds, rail cars, permanent structures and tents. Currently, the largest town is Tiefort City, which consists of approximately 50 buildings. This capability will continue to expand to address the COE and support commander's training objectives.

Deployable MOUT/Modular Armored Tactical Combat House (MATCH) is a deployable, instrumented urban operations training

system. The system utilizes audio and video recording to capture Soldier actions for AAR input. Instrumentation includes internal and external cameras and controlled targetry and battlefield effects. Facility also includes external lighting, internal and external stairwells, breach points and moveable wall panels to enhance training. MATCH is designed to be used with ball ammunition and will support up to and including 7.62 mm.

NTC Live-Fire Targets provide for the development and acquisition of replacement target systems on the live-fire ranges. The program will replace existing target systems with state-of-the-art capabilities, integrate and be compliant with NTC OIS live-fire command and control (C2), and improve the C2 target array. This program supports modular force conversion and the global war on terrorism.

NTC Rail Spur. Based upon the force structure of the modular BCTs and supporting brigades, there is an increase in the required railcars from 200 to 500. Yermo (USMC Logistics Base) is not capable of handing the throughput. To meet future Army throughput requirements to the NTC, a rail spur is needed.

Opposing Forces Surrogate Training Systems (OSTS) consists of the OPFOR Surrogate Vehicle (OSV), OPFOR Surrogate Tank Vehicle (OSTV) and OPFOR Surrogate Combat Wheeled Vehicle (OSWV). These are based on the M113A3 chassis with visual modifications to include an OSV turret that is driven by BFV components. Excess M60 thermal sights are utilized. The OSTV replaces the M551 Sheridan and M60 tanks used as surrogate tanks, and the OSV replaces M551s and M113s used as surrogate BMP fighting vehicles. These systems will be fielded to NTC, JRTC and CMTC.

OPFOR Combat Wheeled Vehicle. A change in the operational environment reduces the number of combat tracked vehicles but increases wheeled systems. It provides an array of CS/CSS civilian wheeled vehicles encountered on the modern battlefield using a common M1113 HMMWV chassis. These systems reflect changing real-world conditions and provide full-spectrum capability to the maneuver CTC OPFORs. This includes both tactical and technical vehicles. OSTV/OSV support modular force conversion and the global war on terrorism.

CTC Aviation consists of the OPFOR aviation and observer-controller/trainer (OC/T) aviation. OPFOR aviation provides OPFOR rotary-wing aviation and unmanned aerial vehicles (UAVs) that replicate emerging threats. UH-1s are aging, near wear-out, and scheduled to leave the inventory in FY08. OC/T aviation provides the OC/Ts the capability to control the event/exercise and provides an AAR for aviation assets at a maneuver CTC or Joint Air-Ground Center of Excellence (JAGCE) rotation. Both the OPFOR and OC/T aircraft will be fielded as part of the Light Utility Helicopter (LUH) plan and is scheduled for FY08 time frame. There is no UAV program for OPFOR. These systems will replicate real-world conditions and provide full-spectrum capability to the maneuver CTC OPFORs.

OH-58D TESS is needed to support aviation systems during normal rotations (NTC, JRTC and CMTC) as well as at the JAGCE. OH-58D TESS would allow realistic play and provide valuable AAR feedback. TESS allows OH-58Ds to be instrumented for AAR purposes and safety during CTC and JNTC rotations. TESS will interface with current instrumentation systems (IS) at the CTCs and the replacement for IS which will be the Objective Instrumentation System. OH-58D will be in

the Army inventory until FY12. Additionally, TESS may be modified to instrument LUH/ Armed Reconnaissance Helicopter (ARH), which will be fielded to replace OH-58D and UH-1.

Training Support for the Future Combat Systems (FCS) Program

To fulfill the Army's concepts, the FCS system of systems must be capable of supporting operations, mission rehearsals, and training of separate audiences (Soldiers, units, leaders and battle staffs) simultaneously.

The FCS program provides the opportunity to fundamentally change training in the Army. The Army's goal—to train anywhere, anytime—is best achieved by providing an embedded training (ET) capability in all Future Combat Systems. To that end, embedded training is the primary option for FCS-equipped BCT training in all training domains—institutional, operational and self-development—including the Army Combat Training Centers and the Joint National Training Center. ET is being developed as an integral part of the FCS manned platform and command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) architectures, not as a set of add-on boxes and software applications. Embedded LVC training is an increment 1 capability and a Key Performance Parameter (KPP). KPP#6 requires "the FCS Family of Systems must have embedded individual and collective training capability that supports live, virtual, and constructive training environments." ET will be designed-in at the start of the program to ensure it is developed in conjunction with the other FCS systems of systems components.

Conclusion

People are central to the Army—they are the keys to achieving ready forces today and a transformed Army tomorrow. Effective Soldiers and leaders—those who are self-aware, adaptive and innovative—will solve unforeseen operational problems. Developing and maintaining this edge in the human dimension is critical to the success of Army transformation and sustaining day-to-day operational readiness. The Army is committed to the development of its leaders at all levels. This commitment extends equally to all officers, warrant officers, NCOs and DA civilians of the Active Army, Army National Guard and Army Reserves. Leaders must be appropriately developed before assuming and while occupying leadership positions to ensure they are competent in, and confident of, their ability to lead at the level assigned. In short, the goal is to develop competent, confident leaders who can exploit the full potential of present and future doctrine.

Army training must change to remain relevant as changes occur in the operational environment. The Army must train Soldiers and units for situations and missions they will face today and in the future. The Army must provide leaders, Soldiers, and units tough, realistic, multi-echeloned and fully integrated training that will produce bold and innovative leaders to deal with complex situations, flexible Soldiers with the Warrior Ethos, and well-trained units. Soldiers of the 21st century will be expected to achieve these results across the full spectrum of operations. The nature of future threats demands that the Army place its highest priority on training the nation's Soldiers.

Annex D: Materiel

Introduction

This annex provides a brief description and status of key Army materiel programs contained in the FY07 President's Budget (PB07). These programs develop and field new equipment systems, provide incremental improvements to existing systems, or recapitalize existing fielded systems by rebuilding to a zero-miles/-hours condition and upgrading system capabilities.

These materiel programs are part of a comprehensive and integrated doctrine, organization, training, materiel, leadership and education, personnel and facilities (DOTMLPF) modernization solution to execute two of the Army's key strategies: (1) providing relevant and ready land power capability to the Combatant Commander as part of the joint team, and (2) training and equipping our Soldiers to serve as Warriors and growing adaptive leaders who are highly competent, flexible and able to deal with future challenges.

The Acquisition Phases and Developmental Processes

The materiel programs described in this annex are in various phases of the acquisition management life cycle. Figure D-1 depicts the acquisition management process and management milestones. Both the new and old terms are provided because programs initiated under the old life-style model still use those terms. Definitions for these phases and

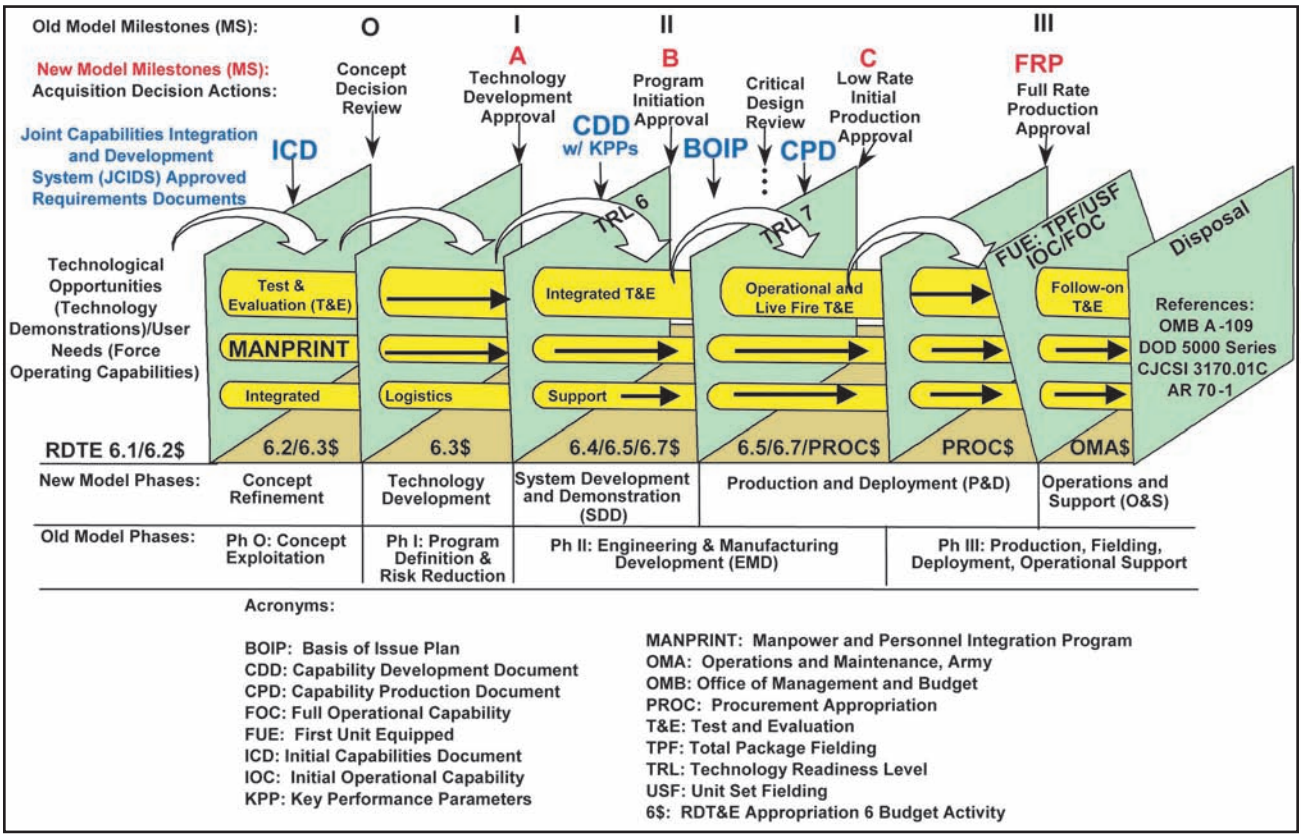


Figure D-1. System Acquisition Management Process

other acquisition terms can be found in the Department of Defense (DOD) 5000 Defense Acquisition Policy documents.

Evolutionary acquisition is the DOD-preferred strategy being used by the Army to rapidly acquire materiel systems with mature technologies for the user. This strategy delivers capabilities in increments, with the recognition that future improvements in capability will be needed. The objective is to balance needs and available capability with resources, and to put capability into the hands of the user quickly. Success of this strategy depends on consistent and continuous definition of requirements, maturation of technologies, and continuous collaboration between the user, tester, and developer to develop and produce systems with increasing capability towards a materiel concept. Figure D-2 depicts this requirements and acquisition process.

Evolutionary acquisition uses two key processes, incremental development and iterative development and insertions, to provide for continuous discovery and development of technology for military applications that enhance Joint Force capabilities.

Through the incremental development process, a desired capability is identified and the required end state is defined. That requirement is met over time by the development of several increments, each dependent on available mature technology. The requirement for future increments is based upon the ability to fill the gap between the current capability and the objective capability (100 percent design concept) for a system.

Through the iterative development and insertion process, a desired capability is identified, but the end-state requirements are unknown

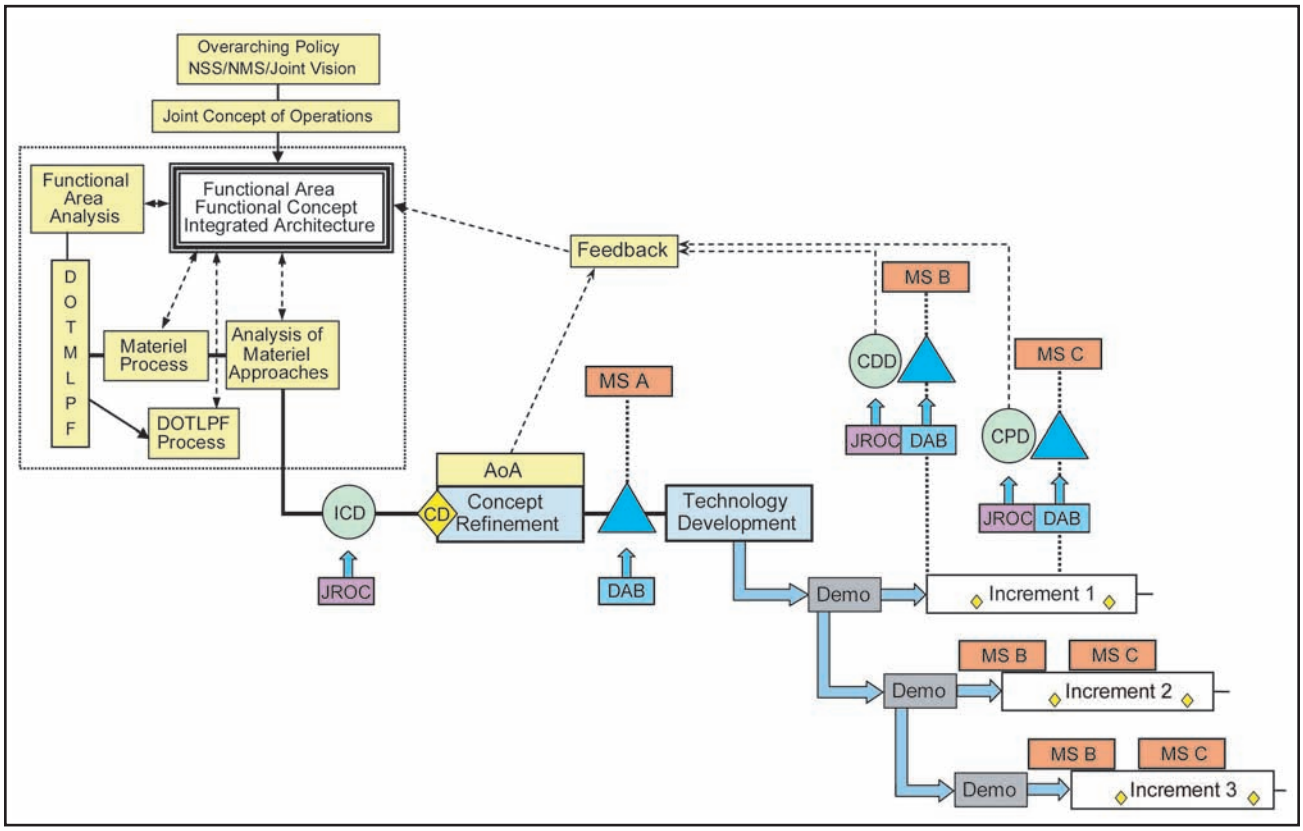


Figure D-2. Requirements and the Acquisiton Process

at program initiation. Those requirements are refined through experimentation, risk management, and continuous user feedback to provide the best possible capability within an increment. The requirement for future iterative development and insertion depends on user feedback and technology maturation.

Both incremental and iterative development and insertion require close coordination between materiel and training developers to ensure training products and plans are developed to support the new capabilities provided by each increment and any iterative developments and insertions applied outside an increment cycle to existing systems.

Developing Capabilities for the Future Joint Force

The Army is modernizing its current modular force to remain a relevant and ready component of the Joint Force that meets near-term operational challenges while continuously pursuing truly transformational changes to develop a future combat force over time. The Joint Capabilities Integration and Development System (JCIDS) is the top-down joint capabilities-based requirements generation process that guides Army and the other Services' investment in transformational capabilities for the future Joint Force. The overarching Capstone Concepts for Joint Operations (CCJO) is the first step in this process that translates strategic guidance to desired joint capabilities. It is an overarching concept and construct that provides the operational context for transformation by linking strategic guidance with the integrated application of Joint Force capabilities. The CCJO describes how the Joint Force intends to operate across the range of operations from 2012 to 2025 (Figure D-3).

The CCJO is a unifying framework for developing supporting Service concepts, subordinate joint operational, functional, and enabling concepts, and a set of integrated operational, technical, and system architectures that look at existing, evolving and future Joint Force requirements. These concepts and architectures will be validated through joint analysis, experimentation and lessons learned to guide future joint- and Service-led modernization efforts.

Joint Functional Concepts

There are six appendices to this annex. Each appendix is aligned with one of the functional concepts of force application, protection, focused logistics (FL), battlespace awareness (BA), command and control (C2), and net-centric. Each functional concept describes the approach for providing a par-

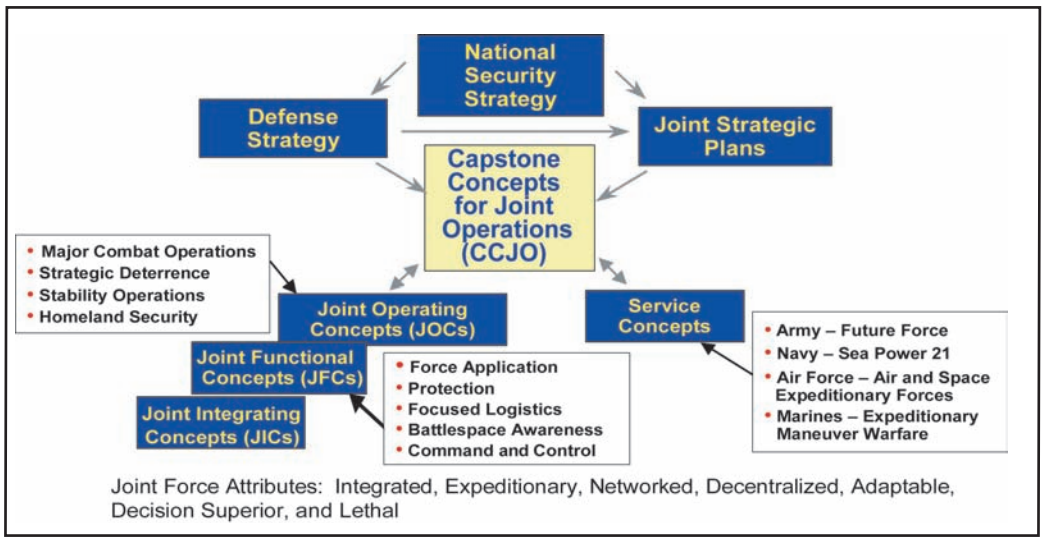


Figure D-3. Capstone Concepts for Joint Operations Framework

ticular military capability across the range of military operations. Under JCIDS, the Joint Staff J8 is using these functional capability categories to focus joint analysis. Programs that provide more than one functional capability are assigned a lead Joint Warfighting Capability Assessment (JWCA) team with one or more supporting JWCAs to do the analysis up front of proposed concepts and DOTMLPF solutions. A designated Functional Capability Board (FCB), which is also aligned with one of these emerging Joint Functional Concepts, validates this analysis and forwards recommendations to the Joint Requirements Panel and Joint Requirements Oversight Council (JROC) that provides top-down guidance and direction to the Services on their modernization programs.

In this annex, Army materiel programs with more than one functional capability are described only once within a functional capability appendix that best follows the current portfolio of the six FCBs described below and as aligned in the equipping resourcing framework used to organize the Army equipping program.

Force application capabilities are those that cause an effect on the enemy. The force application FCB portfolio includes land, maritime, information, space, psychological, deception, and special operations; joint targeting and fires; conventional, nuclear and electronic attack; and suppression against enemy air defense. **Appendix 1, Force Application**, provides a description and status of the following PB07-funded materiel programs:

Aviation Modernization

AH-64 Apache
Armed Reconnaissance Helicopter (ARH)
Light Utility Helicopter (LUH)
UH-60 Black Hawk
CH-47 Chinook
Extended Range/Multi-Purpose (ER/MP) Unmanned Aircraft System (UAS)
Small Unmanned Aircraft System (SUAS)
Fixed Wing
Hellfire Family of Missiles
Advanced Precision Kill Weapon System (APKWS)
Aircraft Survivability Equipment (ASE)
Aviation Electronics (Avionics)
Aircrew Integrated Systems (ACIS)
Air Traffic Services/Army Airspace Command and Control (ATS/A2C2)
Aviation Ground Support Equipment (AGSE)
Aircraft Component Improvement Program (ACIP)
Training Aids, Devices, Simulators and Simulations (TADSS)

Soldier Modernization

Soldier as a System (SaaS)
Ground Soldier System (GSS)
Mounted Warrior (MW)
Air Warrior (AW)
Enhanced Night Vision Goggles (ENVG)
Thermal Weapon Sights ((TWS)
XM307 Objective Crew Served Weapon (OCSW)
Lightweight Laser Designator Range Finder (LLDR)
Nonlethal Capabilities Set (NLCS)

Ground Force Modernization

Abrams Tank
Bradley Fighting Vehicle
Stryker Family of Armored Vehicles
Lightweight 155 Howitzer (M777)
M119A2 Lightweight 105-mm Towed Howitzer

Future Combat Systems (FCS) [1]
Non-Line-of-Sight Cannon (NLOS-C) [2]
Non-Line-of-Sight Launch System (NLOS-LS) [2]
High Mobility Artillery Rocket System (HIMARS)
Army Tactical Missile System (ATACMS) Family of Munitions
Chemical Energy Missiles—Javelin and TOW 2B
Improved Target Acquisition System (ITAS)
Guided MLRS (GMLRS) Rocket
120-mm XM395 Precision Guided Mortar Munition (PGMM)
Excalibur
Precision Guidance Kit (PGK)
Mid-Range Munition (MRM)
M117 Armored Security Vehicle (ASV)

Protection capabilities prevent an enemy's effect on us. The protection FCB portfolio includes personnel and infrastructure protection, nonproliferation and counterproliferation, and consequence management. **Appendix 2, Protection**, provides a description and status of the following PB07-funded materiel programs:

Air and Missile Defense (AMD) Modernization

PAC-3/MEADS Combined Aggregate Program (CAP)
Terminal High Altitude Area Defense (THAAD)
Surface-Launched Advanced Medium-Range Air-to-Air Missile (SLAMRAAM)
Ground-Based Midcourse Defense (GMD) Segment
Counter-Rocket, Artillery and Mortar (C-RAM)
Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS)
Rapid Aerostat Initial Deployment (RAID)
Sentinel
Air and Missile Defense Planning and Control System (AMDPCS)
Forward Area Air Defense-Command and Control (FAAD-C2)
Air Defense and Airspace Management (ADAM) Cell
Joint Tactical Ground Station (JTAGS) Multi-Mission Mobile Processor (M3P)

Chemical, Biological, Radiological, Nuclear (CBRN) Defense Modernization

M31/M31A1/M31E2 Biological Integrated Detection System (BIDS)
Stryker-Nuclear, Biological, and Chemical Reconnaissance Vehicle (NBCRV)
M56 Wheeled Smoke System (Coyote)
Vehicle Obscuration Smoke Systems (M6 and M7)
Chemical Biological Protection Shelter System (CBPSS)
Joint Portal Shield (JPS) Detector System
Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD)
Joint Chemical Agent Detector (JCAD)

1 Future Combat Systems includes 18+1+1 systems consisting of unattended ground sensors (UGS); two unattended munitions, the Non-Line-of-Sight–Launch System (NLOS-LS) and Intelligent Munitions System (IMS); four classes of unmanned aerial vehicles (UAVs) organic to platoon, company, battalion and BCT echelons; three classes of unmanned ground vehicles, the Armed Robotic Vehicle (ARV), Small Unmanned Ground Vehicle (SUGV), and Multifunctional Utility/Logistics and Equipment Vehicle (MULE); and the eight manned ground vehicles (i.e., Mounted Combat System (MCS), Infantry Carrier Vehicle (ICV), Non-Line-of-Sight Cannon (NLOS-C), Non-Line-of-Sight Mortar (NLOS-M), Reconnaissance and Surveillance Vehicle (RSV), Command and Control Vehicle (C2V), Medical Vehicle (MV), and FCS Recovery and Maintenance Vehicle (FRMV)). (18 individual systems); plus the network (18+1); plus the Soldier (18+1+1). Although some of these systems are funded separately, they are core FCS systems.

2 Although funded separately, this is a core FCS system.

Joint Chemical, Biological, and Radiological Agent Water Monitor (JCBRAWM)
Joint Warning and Reporting Network (JWARN)
Joint Effects Model (JEM)
Joint Portable Decontamination System (JPDS)
Joint Service Sensitive Equipment Decontamination (JSSED) System
Joint Service Transportable Decontamination System (JSTDS)
Joint Service Personnel/Skin Decontamination System (JSPDS)
Joint Platform Interior Decontamination (JPID)
M100 Sorbent Decontamination System (SDS)
Joint Service General Purpose Mask (JS-GPM)
Joint Biological Agent Identification and Diagnostic System (JBAIDS)
National Guard Weapons of Mass Destruction Civil Support Team (WMD-CST) Unified Command Suite (UCS)
National Guard Weapons of Mass Destruction Civil Support Team (WMD-CST) Analytical Laboratory Suite (ALS)
CBRNE Installation Protection Program (IPP)

Counter-IED Modernization

Warlock/CREW

Focused logistics (FL) capabilities deploy, sustain and support the force. The FL FCB portfolio includes deployment distribution, sustainment, medical, mobility, and logistics command and control. **Appendix 3, Focused Logistics**, provides a description and status of the following PB07-funded materiel programs:

Unity of Effort Modernization

Global Combat Support System-Army (GCSS-Army)
Battle Command Sustainment Support System (BCS3)
Medical Communications for Combat Casualty Care (MC4) System

Domain-Wide Visibility Modernization

Movement Tracking System (MTS)
Property Book Unit Supply Enhanced (PBUSE)
Standard Army Maintenance System (SAMS-E)

Rapid and Precise Response Modernization

Joint High Speed Vessel (JHSV) (formerly the Theater Support Vessel (TSV))
Joint Precision Airdrop Systems (JPADS)
Advanced Aviation Forward Area Refueling System (AAFARS)
Petroleum Quality Analysis System (PQAS)
Tactical Electric Power (TEP)
Standard Automotive Tool Set (SATS)
Family of Medium Tactical Vehicles (FMTV)
High Mobility Multipurpose Wheeled Vehicle (HMMWV)
Heavy Expanded Mobility Tactical Truck (HEMTT)
Palletized Load System (PLS)
Containerized Kitchen (CK)
Unit Water Pod System (Camel)
Load Handling System (LHS) Compatible Water Tank Rack System (Hippo)
Load Handling System Modular Fuel Farm (LMFF)
1,500-GPH Tactical Water Purification System (TWPS)
Rapidly Installed Fluid Transfer System (RIFTS)
Container/Material Handling Equipment (C/MHE)

Maintenance Support Device (MSD)
Man-Transportable Robotic System (MTRS)
Forward Repair System (FRS)

Assured Mobility Modernization

AN/PSS-14 Handheld Standoff Mine Detection System (HSTAMIDS)
Ground Standoff Minefield Detection System (GSTAMIDS)
Airborne Surveillance, Target Acquisition, and Minefield Detection System (ASTAMIDS)
Route Clearance Vehicles
Intelligent Munitions System (IMS) [2]
Spider (Anti-personnel Land Mine Alternative (APL-A))
Improved Ribbon Bridge (IRB)
Rapidly Emplaced Bridge System (REBS)
Dry Support Bridge (DSB)

Battlespace awareness (BA) capabilities collect, analyze and process battlespace information. The BA FCB portfolio includes all source intelligence collection, environmental data collection, predictive analysis, and knowledge management. **Appendix 4, Battlespace Awareness**, provides a description and status of the following PB07-funded materiel programs:

Distributed Common Ground System-Army (DCGS-A)
All Source Analysis System (ASAS)
Aerial Common Sensor (ACS)
Advanced Field Artillery Tactical Data System (AFATDS)
Long-Range Advanced Scout Surveillance System (LRAS3)
Tactical Exploitation System (TES)
Integrated Meteorological System (IMETS)
Trojan Special Purpose Integrated Remote Intelligence Terminal (Trojan SPIRIT)
Prophet
Tactical Unmanned Aerial Vehicle (TUAV) Shadow 200
Counterintelligence/Human Intelligence Information Management System (CHIMS)
Sequoyah Foreign Language Translation System (S-FLTS)

Command and control (C2) capabilities plan, prepare and direct execution of missions. The C2 FCB portfolio includes common operational picture (COP), joint C2, communications and computer environment, and our own force information collection. **Appendix 5, Command and Control**, provides a description and status of the following PB07-funded materiel programs:

Army Battle Command System (ABCS)
Global Command and Control System-Army (GCCS-A)
Joint Command and Control (JC2) Capabilities
Mounted Battle Command on the Move (MB-COTM)
Maneuver Control System (MCS)
Command Post of the Future (CPOF)
Standardized Integrated Command Post System (SICPS)
Army Airborne Command and Control System (A2C2S)
Space Support Enhancement Toolkit (SSET)
Force XXI Battle Command Brigade and Below (FBCB2)
Grenadier BRAT (GB) and Mini-Transmitter (MTX) Blue Force Tracking (BFT) System
Single Channel Ground and Airborne Radio System (SINCGARS)

Net-centric capabilities help provide universal access to all relevant authorities, assets and capabilities and enable commanders to

2 Although funded separately, this is a core FCS system.

effectively coordinate battlefield effects and maintain full spectrum dominance and decision superiority. The net-centric FCB portfolio consists of integrated information systems and supporting information infrastructure. **Appendix 6, Net-Centric**, provides a description and status of the following PB07-funded materiel programs:

Satellite Communications (SATCOM)
Combat Service Support (CSS) Satellite Communications (SATCOM)
Global Positioning System (GPS)
Warfighter Information Network-Tactical (WIN-T)
Joint Tactical Radio System (JTRS)
Bridge-to-the-Future Network (BFN)
Joint Network Node (JNN)
Joint Network Management Systems (JNMS)
Integrated Systems Control (ISYSCON) (TIMS)

Appendix 1: Force Application

Force application is the sum of all actions taken to cause desired effects on our adversary. Force application encompasses all aspects of fires and maneuvers that suppress, neutralize, seize or destroy an objective. These effects are conducted with precision—in time, sequence, location, duration and intensity—in order to apply immediate and continuous pressure on enemy capabilities. These actions occur in all domains—land, maritime, space and cyberspace—and include conventional and unconventional operations using conventional weapons, nonlethal weapons or nuclear weapons. These actions are enabled by offensive information operations (IO).

The Joint Force—adept at overcoming anti-access and area-denial strategies, attacking throughout the depth and breadth of the battlespace, and defeating fixed and mobile targets in all terrain and weather conditions across the full spectrum of conflict—requires a broad range of force application capabilities. The Army provides significant force application capabilities through sustained land dominance using conventional and unconventional air and ground maneuver forces that gain and maintain a positional advantage with decisive speed and overwhelming operational tempo. This dominant maneuver capability enhances the timeliness, range, precision and impact of joint fires. Enabled by space, airborne and ground-based systems that provide robust command, control, communications, and computer (C4) and intelligence, surveillance and reconnaissance (ISR) and an enhanced suite of kinetic and nonkinetic munitions, the Army provides lethal and precise fires for the Joint Force commander.

In conjunction with the Joint Force, the Army provides full-spectrum forces that are able to integrate maneuver, fires and IO across the full range of military operations. These include conducting operational maneuver from strategic distances; conducting mobile strike operations; closing with and destroying enemy forces; applying precision fires and maneuver; exercising information superiority; commanding and controlling joint and multinational forces; and providing direct, continuous and comprehensive control over terrain, resources and people.

The Army is equipping the Soldier to continue to provide force application capabilities required in the evolving security environment. This appendix provides a brief discussion of the Army's force application capabilities that provide the Joint Force dominant air and ground maneuver coupled with precision engagement and the key materiel programs associated with these capabilities. While materiel programs that support operational maneuver from strategic distances and assure

mobility are force application capabilities supporting dominant maneuver, these programs are described in this annex under Appendix 3, Focused Logistics, given that deployment distribution and mobility are areas within the current FL FCB portfolio.

Aviation Capabilities

Aviation's strength is its ability to deploy quickly, maneuver rapidly, focus tremendous combat power, and achieve surprise and positional advantage. It is instrumental in achieving simultaneous, distributed and continuous combined arms air-ground operations.

With its manned and unmanned assets, aviation organizations develop situations from both in and out of contact with the enemy, maneuver to positions of advantage, engage enemy forces beyond the range of their weapons, destroy them with precision fires, and provide close support. Its inherent mobility, flexibility, agility, lethality and versatility are instrumental in enabling the air-ground task force commander to conduct decisive joint operations.

Aviation conducts maneuver, maneuver support, and maneuver sustainment operations across the spectrum of conflict. Highly skilled and knowledgeable aviation Soldiers employing aviation systems from entry operations to decisive action provide a significant contribution to the quality of firsts (see first, understand first, act first and finish decisively). Aviation operations develop the COP, shield the maneuver force, shape the battlefield, extend the tactical and operational reach of the maneuver commander, and sustain the force. Aviation is critical to the Army's stability and support requirements, to include the homeland security requirements of our nation. Modernization and sustainment of Army aviation ensures these capabilities are maintained.

Aviation Modernization

Aviation modernization and recapitalization of existing aviation systems projected to remain in the fleet into the 2015-25 time frame are essential to supporting current as well as future operations. The urgent need to address the steadily deteriorating condition of the aviation fleet and accelerate reserve component (RC) modernization is being addressed through an aviation transformation plan. This plan:

- Accelerates active component (AC) and RC aviation modernization efforts
- Aligns aviation structure and resources to comply with future force requirements, including Unmanned Aircraft Systems (UAS)
- Accelerates divestiture of nonmodernized aircraft (UH-1, OH-58D and OH-58A/C)
- Restructures and standardizes attack and lift formations across the force
- Leverages new training technologies to maintain crew proficiency
- Invests in improvements for aircraft and UAS reliability/maintainability
- Procures new UH-60Ms to accelerate fielding of utility aircraft to the Army National Guard (ARNG)
- Procures Light Utility Helicopters (LUHs) to divest aging UH-1s and OH-58A/Cs primarily found in the ARNG
- Converts an additional 96 AH-64As located in Army Reserve and ARNG units to AH-64Ds

- Procures Armed Reconnaissance Helicopters (ARHs) to divest the OH-58KWs
- Procures the Future Cargo Aircraft (FCA) to replace an aging fixed-wing fleet
- Procures Extended Range/Multi-Purpose (ER/MP) Unmanned Aircraft Systems (UAS)
- Procures Small Unmanned Aircraft Systems (SUAS)
- Invests in future (2025) joint solutions: Joint Heavy Lift (JHL)
- Continues to upgrade the aviation force with an improved infrared countermeasure suite capable of defeating the most advanced threat man-portable air defense system

The last several years have seen great progress in modernizing Army aviation. Fielding of the AH-64D Longbow Apache is well underway. Recapitalization programs for the CH-47 Chinook and UH-60A Black Hawk continue to provide outstanding products to the ARNG. The ARH will replace the OH-58D. Fixed wing is modernizing its current turboprop fleet (C-12 and RC-12) with the Global Air Traffic Management (GATM) system as well as other safety and cockpit management systems, which will keep these aircraft relevant while the Army procures the FCA to replace legacy C-23 Sherpas and older C-12s. The Army is successfully retiring aging and obsolete aircraft from the force, and lessons learned from previous and current military operations and deployments are being addressed. The Army is continuing to examine the best means to achieve the vertical envelopment capability required to rapidly project the FCS-equipped forces across difficult or distant geographic locations. Future requirements for a robust, fully modernized aviation force are continuing to be developed.

Unmanned Aircraft Systems (UAS)

As the Army transforms to a more flexible, responsive and lethal future combat force, Army UAS will also transform to provide integrated, responsive and lethal capabilities to commanders at all echelons. Future commanders will require UAS with a command and control capability that facilitates the flexible and rapid application of overmatching, decisive land power at specific times and locations throughout a greatly expanded battlespace. On battlefields of the future, UAS will support all Army echelons, across the spectrum of conflict, on varied terrain and across the battlefield operating systems. Redefining the Army's UAS requirements reflects an evolutionary process to ensure the support required for tomorrow's Army while providing the best support possible to our forces engaged in the global war on terrorism.

In Operations Enduring Freedom (OEF) and Iraqi Freedom (OIF), UAS such as the Raven, Shadow 200, Hunter and Improved GNAT (I-GNAT) are providing a new dimension to maneuver forces. The Raven is being provided in theater to OEF and OIF units to enhance small unit reconnaissance, surveillance and target acquisition (RSTA). Raven training for deploying units is conducted in theater and in CONUS. The Shadow 200, the Army's first Tactical Unmanned Aircraft System (TUAS) to go into full-rate production (FRP), is also in use as it continues to be fielded to the military intelligence (MI) company within the Army's maneuver brigades, including the new Stryker brigades. Planned system improvements include engine and airframe upgrades, refined target location error, Tactical Common Data Link (TCDL) and addition of a laser designation into the payload gimble.

The Hunter UAS is fielded within III, V and XVIII Corps aerial exploitation battalions, with

one UAS company per corps consisting of six air vehicles and associated payload and ground control stations. The Hunter is a RSTA and battle damage assessment (BDA) asset providing ground forces with near real-time imagery via electro-optical/infrared (EO/IR) intelligence at ranges up to 200 km. The Hunter UAS, while being used extensively as an ISR platform, has recently been upgraded to employ the Viper Strike munition in OIF. The Hunter UAS capability will be sustained until the ER/MP UAS is fielded at the division level as a RSTA, target attack and command, control, communications and intelligence (C3I) system.

Current UAS modernization efforts focus on accelerating Shadow fielding and providing an SUAS system like the Raven to meet today's operational needs, accelerating future force UAS development and fielding into the current force, continuing development of the ER/MP UAS and science and technology (S&T) efforts that leverage technologies for improved UAS capabilities.

To prepare for the future operational environment, the Army is identifying the latest advances in relevant UAS technology (airframes, payloads, payload management, as well as precision weapons delivery) and integrating these new capabilities into an architecture that is consistent with Army and DOD transformation. Extensive S&T work is also being conducted on vertical takeoff and landing UAS to provide a hover-and-stare capability. The continued development and fielding of UAS with advanced payloads is an important component of the future force's operational concept.

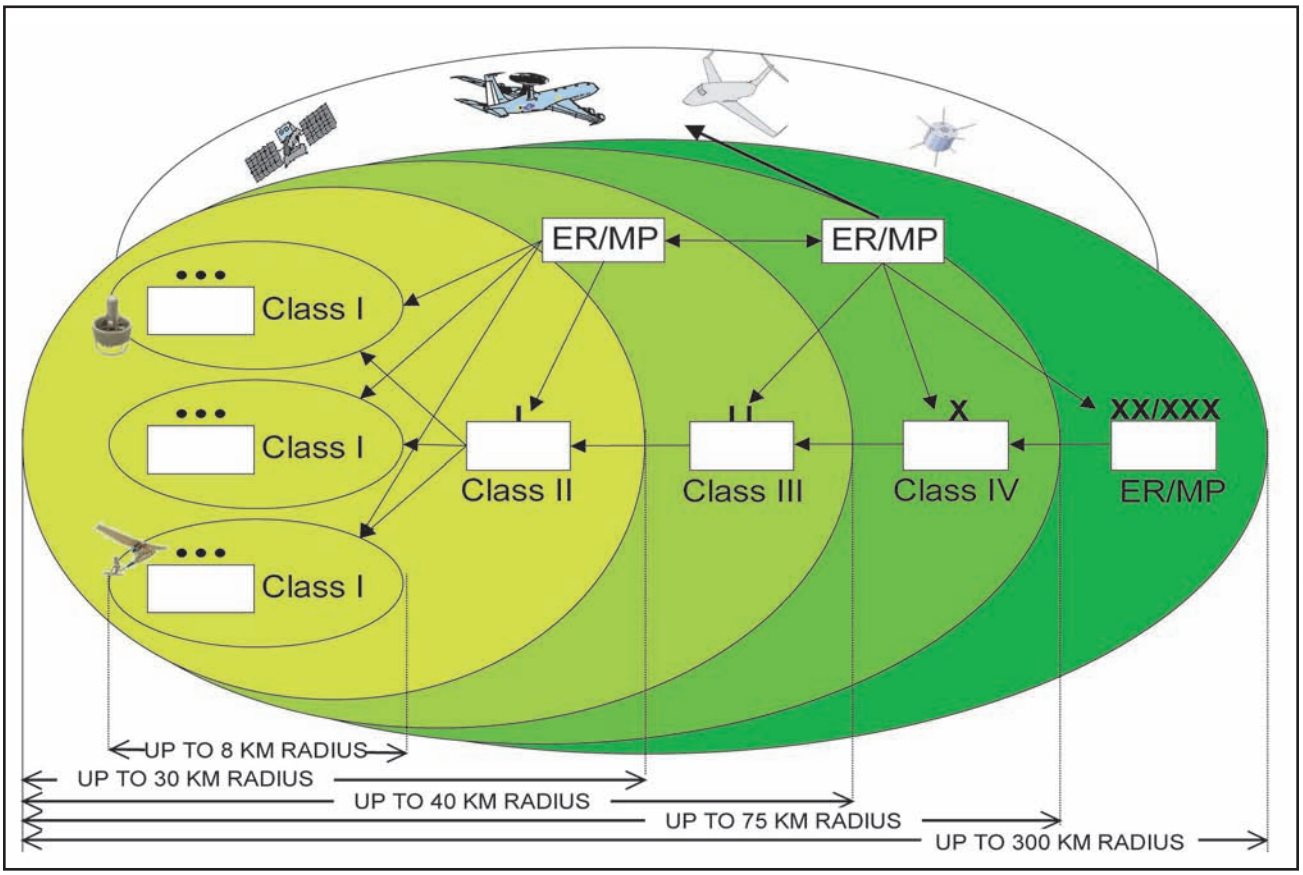


Figure D-4. UAS Future Force Footprint

The future combat force will include an integrated family of UAS that provide support from the platoon-level to the division/corps (Figure D-4). The FCS classes of UAS will be fully integrated elements of the organic ISR capabilities. The FCS Classes I and II UAS are intended to provide the squad leader through the company commander the capability to see over the next terrain feature. The FCS Class III UAS will enable a variety of combat functions such as precision fires, route reconnaissance and situational development at the battalion level. The FCS Class IV UAS will serve as the FCS Brigade Combat Team's (BCT) ISR workhorse to facilitate situational awareness, battle command, targeting support, lethal engagement, BDA and force protection. The Army recently selected the Northrop Grumman Fire Scout for development as the Class IV UAS. While the path to the transformed Army will focus on the evolving future combat force, improving the current force and maintaining interoperability with fielded systems will remain as important and concurrent objectives.

Future Combat Force Aviation

The Army envisions organizing aviation assets into brigade formations at all division and corps levels in support of the ground maneuver brigades and BCTs. Teaming UAS with manned systems will enhance operational fires, maneuver and intelligence collection capabilities for the commander. Future force aviation modernization efforts incorporate lessons learned, the changing operational environment and emerging Joint Force requirements. These efforts leverage key technologies in areas such as electronics, communications and automation open systems architectures, UAS interoperability, propulsion systems and weaponization. These efforts include:

- Fielding SUAS, ER/MP and FCS Classes I through IV UAS
- Ensuring digital interoperability for effective joint/combined force operations
- Fielding effective, affordable systems that enhance aviation survivability and improve Soldier stamina
- Improving aircraft operational readiness by leveraging technology to reduce costs and extend aircraft service life; strategy includes pursuit condition-based maintenance plus (CBM+) initiatives such as the aircraft component improvement program, digital source collection and health usage monitoring
- Replacing obsolete air traffic services equipment and maintaining compliance with future airspace usage requirements
- Digitizing of aviation logistics and modernizing aviation ground support equipment and improving training
- Developing the technologies to ensure fielding of unmanned systems, interoperability of manned/unmanned aircraft, and next generation/future system development
- Leveraging technology to reduce costs, extend aircraft service life and improve training
- Replacing OH-58D aircraft with the ARH to correct numerous capability gaps (interoperability, survivability, agility, versatility, lethality and sustainability)
- Procuring new UH-60M/HH-60M aircraft to grow fleet size to meet modular force requirements; refresh the Black Hawk fleet by reducing the average age of the fleet while providing improved technology that

increases reliability, maintainability and sustainability

- Replacing three aging fixed-wing aircraft (C-12, C-23 and C-26) with the FCA
- Continual modernization of the AH-64D to a Block III configuration with greater capabilities and increased reliability
- Replacing aging UH-1 and OH-58 aircraft with a commercial off-the-shelf (COTS) LUH

The Army aviation modernization plan transforms aviation units to meet the Chief of Staff, Army (CSA) vision for aviation as a modular, capabilities-based maneuver arm organized for the joint fight with a reduced logistics tail. The AC/RC aviation organizations will be structured to meet the Strategic Planning Guidance by providing capabilities-based formations.

Discussion of Key Aviation Materiel Programs

AH-64 Apache

Description. The AH-64 Apache is the Army's heavy attack helicopter for the current and evolving future combat forces. It is assigned to attack battalions and regimental aviation squadrons in both the AC and RC. Apache is a two-pilot, twin-engine attack helicopter designed to meet the current mission requirements for reconnaissance and attack worldwide, day or night, and under obscured battlefield and/or adverse weather conditions. It is a highly mobile and lethal aerial weapons platform with an array of armaments designed to destroy armor, personnel and materiel. The Apache has been in the Army inventory since 1986, and an upgraded AH-64D Longbow began fielding in 1998. The AH-64D upgrades, among other improvements, adds a millimeter wave Fire Control Radar (FCR), Radar Frequency Interferometer (RFI), fire-and-forget radar-guided missile, and cockpit management and digitization enhancements. The combination of the FCR, RFI and the advanced navigation and avionics suite provides increased situational awareness, lethality and survivability. The Apache-focused recapitalization program integrates a number of related initiatives to produce and/or retrofit aircraft across the Apache fleet to meet the objectives of the Army's recapitalization policy and to address lessons learned from recent combat operations and deployments. This program increases aircraft life by addressing high-maintenance demand/operating and support (O&S) cost drivers and incorporating a second-generation forward-looking infrared (FLIR) with the Modernized Target Acquisition Designation Sight/Pilot Night Vision Sensor (M-TADS/PNVS). The program goals are to reduce the overall average airframe age of the fleet to the half-life metric of 10 years by 2010, increase the unscheduled mean time between removal rate by 20 percent for selected recapitalized components, and maximize the return on recapped components by 20 percent.

Program Status. The remanufacture of 597 AH-64As to the AH-64D Longbow configuration will be complete in FY10. Multi-year I delivered 232 AH-64Ds through FY02. A second multi-year contract was signed in Oct 00

for an additional 269 AH-64Ds with deliveries through FY06. In Sep 05, a contract was signed providing 13 wartime replacement aircraft in the lot 10 configuration. Deliveries of these aircraft begin in the summer 2007. An additional 96 AH-64A model Apache conversions to the D model Longbow configuration will occur with inductions beginning in Jan 07 and deliveries in FY08 through FY10. Following this conversion, the Apache modernization plan continues in 3QFY10 with the initiation of the Block III Apache Longbow program. The Block III Longbow will provide a net-ready capability that integrates the Apache into the future force as well as provides platform weight reduction, open systems architecture and reduced pilot workload via cognitive decision aiding technologies. A Milestone B Defense Acquisition Board is scheduled for spring 2006 to receive Office of the Secretary of Defense (OSD) approval to proceed into the system development and demonstration (SDD) phase. Fielding of the M-TADS to the total fleet began with first unit equipped (FUE) in FY05 and will be completed by the end of FY11.

Armed Reconnaissance Helicopter (ARH)

Description. As a result of analysis identifying existing capability gaps and subsequent CSA Aviation Focus Group decisions, in Feb 04 the CSA identified the need for 368 ARH aircraft. The ARH program was established to correct deficiencies in the OH-58D currently fulfilling the reconnaissance role. The mission of the ARH is to provide a robust reconnaissance and security capability for the joint combined arms air-ground maneuver team. The ARH will be fielded to support the current force in the global war on terrorism and will possess the growth potential to bridge the capabilities gaps to the evolving future combat force.

Program Status. On 29 Jul 05, Bell Helicopter Textron, Inc., Fort Worth, Texas, was awarded a cost-plus-incentive-fee contract for the SDD of the ARH, including subsystem integration and testing as well as training-device development. Work will be performed in Fort Worth and is estimated to be completed on 30 Sep 08. The SDD planned efforts include integration of nondevelopmental item (NDI) subsystems onto an existing helicopter platform, developmental/operational testing and qualification to support the Milestone C low-rate initial production (LRIP) decision. An FRP decision review will be held in FY09.

Light Utility Helicopter (LUH)

Description. The LUH will conduct light utility missions in support of specified Army tasks. The specified Army tasks will be conducted as part of an integrated effort with other Services, government agencies, nongovernmental organizations and civil organizations. These missions include homeland security support operations, general support operations, generating force medical evacuation (MEDEVAC) operations, and support for Army training centers and test activities.

The LUH will replace the UH-1 and OH-58A/C aircraft. Additionally, introduction of this aircraft will return a number of UH-60s back to the warfighting force. The LUH will be a commercial/NDI aircraft that is less costly to procure and operate than the UH-60. It is being procured as a Federal Aviation Administration (FAA)-certified aircraft. The maintenance concept will employ a mix of Soldier and contractor logistics support; the initial operator and maintainer training will be provided by the contractor.

Program Status. The initial capabilities document (ICD) was JROC-approved in Dec 04, and the Capability Development

Document (CDD) was JROC-approved in Jun 05. The Acquisition Strategy Report was approved in Jul 05, and OSD has delegated the program to the Army as an acquisition category (ACAT)-IC. The LUH program is now undergoing source selection activities and is scheduled for Milestone C/LRIP decision in May 06 with FUE in FY07.

UH-60 Black Hawk

Description. The UH-60 Black Hawk is the Army's current force and future force utility and MEDEVAC helicopter. The UH-60 fleet is composed of 1,596 aircraft. There are 959 UH-60A models, which began production in 1977; 609 UH-60L models, which began production in 1989; and 28 configurations and mission equipment package variants of the UH-60A/L supporting the Army today. The Black Hawk can transport 11 fully equipped combat troops plus an external load up to 8,000 pounds for the UH-60A and 9,000 pounds for the UH-60L. The UH-60 provides the force commander with a rapid and agile maneuver capability through air assault, general support, airborne command and control, and MEDEVAC. The UH-60 gives commanders the ability to initiate, conduct and sustain combat operations by providing internal and/or external lift of troops, weapon systems, supplies and equipment. In the airborne command and control role, it provides full joint and combined interoperability with other command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) elements to commanders at all echelons. The UH-60 is also utilized in support of homeland security and natural disaster relief operations, such as fire suppression, personnel recovery and key personnel transport. The UH-60 is vital to the homeland security needs of our nation.

The Army will procure new UH-60M/HH-60M (MEDEVAC variant) to extend the fleet's lift and range capabilities, reduce O&S costs, enhance survivability, improve strategic transportability, integrate Air Warrior, digitize avionics and flight management systems, plus incorporate GATM requirements, and extend aircraft life. The UH-60M and HH-60M are expected to meet utility and MEDEVAC mission requirements through 2025.

Program Status. The UH-60M and HH-60M programs have received Milestone C LRIP approval and expect FRP decision in May 07. The Army will procure the first 22 LRIP aircraft in FY06. The FUE for the UH-60M is in FY08. The accelerated development of new technologies has resulted in an upgrade program for the UH-60M that will include fly-by-wire Common Avionics Architecture System and Full-Authority Digital Engine Control. The Milestone C LRIP decision for these upgrades will be in FY08.

CH-47 Chinook

Description. The CH-47 Chinook is a twin-turbine, tandem-rotor, heavy-lift transport helicopter with a useful load of up to 25,000 pounds. As the Army's only heavy-lift helicopter, the mission of the CH-47 is to transport troops (including air assault), supplies, weapons and other cargo in combat, combat support, and combat service support operations. The CH-47 is vital to the war on terrorism and homeland security needs of our

nation. Secondary missions include medical evacuation, aircraft recovery, parachute drops, disaster relief, and search and rescue. These aircraft are fielded to heavy helicopter companies and special operations aviation. The CH-47F recapitalization program will provide a more reliable, less costly to operate aircraft compatible with joint digital connectivity requirements in the future force with an extended life of approximately 20 years. Key modifications integrate a new-machined airframe, an upgraded T55-GA-714A engine to restore performance capability, Common Avionics Architecture System, Air Warrior, Common Missile Warning System, enhanced air transportability, Digital Automatic Flight Control System (DAFCS), and an Extended Range Fuel System II for self-deployment

missions. The CH-47F is expected to remain the Army's heavy-lift helicopter until at least the 2020-2025 time frame. The CH-47F also incorporates reliability and maintainability improvements including airframe tuning for vibration reduction, corrosion protection, digital source collectors, and an automated maintenance program with a 400-hour phase interval. The total CH-47 program remanufactures CH-47Ds and special operations aviation MH-47s to the CH-47F/MH-47G configuration and procures the Army aviation transformation full requirement for Chinook aircraft.

Program Status. The CH-47F program received FRP approval on 22 Nov 04, and is currently on contract for 27 CH-47F aircraft, with first delivery scheduled for Sep 06. Initial fielding is to the 160th SOAR (MH-47G) and the 101st AA Division (CH-47F).

Extended Range/Multi-Purpose (ER/MP) Unmanned Aircraft System (UAS)

Description. The ER/MP UAS will provide dedicated mission configured UAS support to the division/corps commander that supports tactical maneuver, with a large requirement for support to the battlefield surveillance brigade (BFSB) and fires brigade; helps maximize combat power; and facilitates operations in an unpredictable and changing environment allowing commanders to act first and finish decisively by providing answers to the commander's critical information requirements. This is accomplished through its long-range, persistent-stare, wide-area surveillance, and wide-area communications networking capabilities. The ER/MP UAS provides tactical commanders a real-time responsive capability to conduct an array of missions to include reconnaissance, surveillance and target acquisition, command and control, communications relay, signals intelligence, electronic warfare, attack, weapons of mass destruction detection and battle damage assessment capability.

The ER/MP is more than an airplane; it is a system that takes into account the entire DOTMLPF solution—people, training, integration with the tactical units and command environment, and ability to conduct 24/7 continuous operations against moving and stationary targets as defined in the Operational Requirements Document (ORD). The ER/MP system is comprised of 12 multi-role air vehicles (six with SATCOM), five ground control stations, two portable ground control

stations, five Tactical Common Data Link (TCDL) ground data terminals, two TCDL portable ground data terminals, one SATCOM system, four automatic takeoff and landing systems, 12 electro-optic/infrared, and 12 synthetic aperture radars/moving target indicators. The ER/MP system equates to a company-size organization and is planned to be fielded as a separate company organic to the combat aviation brigade. Ten companies are planned.

Program Status. The ER/MP received Milestone B approval in Apr 05. Source selection and awarding of the SDD contract was completed in Aug 05. FUE for ER/MP is planned for FY09 with IOC planned for FY10.

Small Unmanned Aircraft System (SUAS)

Description. The SUAS is a lightweight, hand-launched air vehicle that gives brigade to company commanders a far greater ability to shape over-the-hill operations with their own dedicated unmanned aerial vehicles. The SUAS system is designed to operate throughout the full spectrum of offensive and defensive combat operations.

The SUAS is rucksack portable and consists of five basic components: ground control station (GCS), remote video terminal (RVT), air vehicle (AV) (three AVs per system), payload and field repair kit (FRP).

The GCS is a small, lightweight device that allows the operator to program and command the AV via semi-autonomous navigation (via waypoints) and tele-operation (direct operator controlled) navigation. Also, it enables the operator to program mission flight parameters to include coordinates for the launch point, en route/objective waypoints, primary recovery point and contingency recovery points. With a wingspan of 4.5 feet and a weight of 4.2 pounds, the hand-launched, battery-powered AV provides aerial observation, day or night, at line-of-sight (LOS) ranges up to 10 km and delivers color or infrared imagery in real time to the GCS and RVT. Flight duration of 90 minutes is possible with organic rechargeable lithium batteries. Assembly, preflight and launch is accomplished in less than five minutes, with little skill required of the operator. Hand launch and auto-land recovery is made in a small area without a prepared site or auxiliary equipment. Both one-man and two-man operations are possible.

Program Status. LRIP contract was awarded on 13 Oct 05 for 10 SUASs. Deliveries are planned to start in Nov 05 and fielding to units for initial operational test and evaluation (IOT&E) training is scheduled during 3QFY06. Following FRP decision, SUAS is planned to be fielded in Jul 06.

Fixed-Wing

Description. The Army fixed-wing program is composed of approximately 300 aircraft. Fixed-wing aircraft provide efficient, effective transportation during peacetime and wartime operations. Fixed-wing aircraft provide for rapid movement of personnel, critical mission equipment/supplies and special electronic mission aircraft (SEMA) intelligence support. SEMAs collect, analyze and disseminate signal communications and imagery and electronic intelligence in support of wartime requirements for Combatant Commanders, field commanders and national intelligence assets. Fixed-wing aircraft are routinely utilized in disaster relief operations, for air movement of personnel and critical supplies, civil support, counterdrug, security assistance and homeland security missions. The Army modernization plan calls for the FCA to begin replacing older C-23, C-12 and C-26 aircraft starting in FY08.

FCA provides the Army with a self-deployable, 2,400-km cargo aircraft with an 18,000-pound payload capable of performing short takeoffs and landings. FCA will be the predominant Army fixed-wing aircraft with 128 airframes mostly assigned to the RC. The Army is expected to procure 33 FCA (FY06-11) to rapidly move personnel and critical supplies across the battlefield.

Program Status. In Jan 05 the JROC approved the FCA ICD, and in Sep 05 the JROC approved the FCA CDD. These documents pave the way for the modernization of the current Army fixed-wing fleet that will better meet the requirements of the future force.

Hellfire Family of Missiles

Description. Hellfire (HF) air-to-ground missiles are employed to destroy armored and high-value point targets. Semi-active laser (SAL) HF tracks laser energy delivered by ground or airborne designators while Longbow HF uses internal millimeter wave radar frequency (RF) for autonomous guidance. AH-64 Apache, ARH, ER/MP and OH-58D Kiowa Warrior utilize HF as their primary air-to-ground weapon for destruction of high-value point targets. The complementary precision-point, target-engagement capability of the SAL HF and the fire-and-forget, adverse-weather capability of the RF HF provide the commander with flexibility across a wide range of mission scenarios, permitting fast and decisive battlefield response.

Program Status. The Army will address additional Hellfire procurement in the FY08-13 program plan.

Advanced Precision Kill Weapon System (APKWS)

Description. APKWS incorporates laser guidance into the 2.75-in Hydra-70 rocket to provide a lower-cost, lighter-weight precision weapon capable of engaging nonarmored to lightly armored targets and providing an alternative to HF against targets such as buildings, command posts, air defense artillery (ADA) sites and other targets not requiring the HF. The APKWS program provides accuracy and lethality improvements to the family of unguided rockets. The AH-64, OH-58D and ARH will use APKWS to significantly improve aircraft stowed kill capability in scenarios requiring area/suppressive fires or precision engagement against non-armored or lightly armored targets.

Program Status. APKWS has not yet begun production.

Discussion of Aviation Supporting Materiel Programs

Aviation's supporting programs are essential to the support, sustainment and modernization/recapitalization of the aircraft programs discussed previously. These programs are essential to sustain and protect crews/aircraft, maintain interoperability with supported organizations, and field future force capabilities.

Aircraft Survivability Equipment (ASE). The Suite of Integrated Infrared Countermeasures (SIIRCM) will provide an enhanced infrared countermeasure capability to aviation platforms. A component of the SIIRCM is an advanced Common Missile Warning System (CMWS) with an Improved Countermeasure Munitions Dispenser (ICMD) system with advanced flare munitions. The CMWS/ICMD has been tested and certified and is currently being installed on all aircraft platforms desig-

nated to deploy. Additionally, developmental efforts continue and will culminate with the acquisition of a multi-band, solid-state laser jam head capable of defeating all known infrared threats. The laser jam head is the last component necessary to comprise a full-up SIIRCM. All aircraft scheduled for deployment or undergoing recapitalization will have the required supporting wiring and hardware installed for the SIIRCM devices when appropriate. The Army's RF-guided missile protection program will employ the same acquisition strategy as the infrared program. The Army is also planning to upgrade laser warning devices (AN/AVR-2 series) across the fleet.

Aviation Electronics (Avionics). Avionics programs are designed to ensure aviation platforms meet combined arms and joint requirements for C2, mission planning, communications, navigation (to include worldwide civil airspace), information interchange and interoperability. Major avionics initiatives include the future fielding of the Joint Tactical Radio System (JTRS) in modernized aviation platforms, which will provide enhanced situational awareness, high-speed data and video exchange, and improvements in interoperability. Delays in JTRS have necessitated the procurement of an interim radio suite providing significant increases in capabilities to include data exchange and SATCOM. Other advancements in avionics include migration of the Aviation Mission Planning Systems (AMPS) to a Joint Mission Planning System (JMPS), which will provide significant increases in mission-planning capabilities including an enhanced mission-rehearsal capability; upgrades to the Improved Data Modem (IDM) as the centerpiece to digitization; Global Positioning System (GPS) equipment for improved navigation accuracy; and GATM equipment mandated when flying in civil airspace; and development of the Joint Precision Approach and Landing Systems (JPALS), which provides a joint common instrument approach system for fixed base, tactical field sites and shipboard procedures.

Aircrew Integrated Systems (ACIS). The ACIS program develops and fields equipment required to protect, sustain and enhance aircrew performance in sustained operations, on the ground, and during survival-evasion operations. Air Warrior is the primary ACIS program that provides integrated, modular life support equipment and chemical/biological protection, reduced weight/bulk, and significantly improved flight time in Mission-oriented Protective Posture (MOPP) 4 gear. Air Warrior is described under Discussion of Key Soldier Modernization Programs in this appendix.

Air Traffic Services/Army Airspace Command and Control (ATS/A2C2). ATS organizations must be specially equipped, highly trained, rapidly deployable, and capable of operating within the United States, and international and combat airspace systems. They provide the full range of air traffic services supporting disaster relief, peacekeeping forces, homeland security and military operations from contingency operations through major combat operations. ATS remains the Army's core enabler for airspace command and control, ensuring synchronized access of the increasingly congested joint, coalition and civil airspace systems. ATS modernization fields smaller, lighter, more efficient, more robust, digitally connected terminal and en route communications, tracking and precision navigation systems for tactical and fixed-base operations. Major programs include the Tactical Airspace Integration System (TAIS), the Air Traffic Navigation, Integration, and Coordination System (ATNAVICS), Mobile Tower System (MOTS), and the Joint Precision Approach and Landing System (JPALS).

Aviation Ground Support Equipment (AGSE). To support and sustain full-spectrum operations, aviation logistics and maintenance must be as responsive and capable as the force it supports. To improve responsiveness, reduce vulnerability and increase operational momentum, aviation must reduce the current in-theater aviation logistics footprint. The goal of AGSE modernization is to reduce logistical support requirements by pursuing common ground support equipment that is mission configurable, enabling redundancy capabilities while improving aircraft operational readiness. Initiatives focus on improved automation, modularity, sustainability and integration of seamless logistics management through automation systems; and replacement of aging ground support equipment.

Aircraft Component Improvement Program (ACIP). ACIP sustains engineering efforts to investigate, identify corrective actions and address field-identified, safety critical and reliability deficiencies. ACIP inserts emerging technology, extends service life, drives down O&S costs and improves readiness by keeping components operationally ready longer.

Training Aids, Devices, Simulators and Simulations (TADSS). TADSS modernization is critical to the combat effectiveness of our aircrews and maintainers, and in reducing operational costs. Aviation TADSS will leverage technology to provide effective and affordable combined arms/joint training and mission planning and rehearsal simulators that are current with the aircraft/systems they replicate. Simulator concurrency, fidelity and combined arms tactical and mission rehearsal simulators/simulations that network virtual, constructive and live simulation systems are major initiatives.

Army Aviation Summary

Army aviation's modernization efforts are focused on fixing warfighting deficiencies (particularly those uncovered during recent operations), aligning the aviation force with the Army's future force concept, and fielding aircraft/subsystems required to achieve full-spectrum operational capability. Aviation modernization is being achieved through force structure changes, training initiatives, and materiel modernization (AH-64D, UH-60M/HH-60M, ARH, LUH, FCA, Apache Block III, CH-47F, UAS, Air Warrior and other subsystem programs). Aviation is supported by S&T programs designed to provide the technology base required to upgrade existing aircraft and meet the challenges of new aircraft/weapon system developments such as the Joint Heavy Lift initiative. This balanced S&T investment for the current force and future force will enable near-term evolutionary technology insertion into the current fleet, while providing the opportunity for revolutionary technology solutions for the future. The Army's commitment to divesting currently obsolete aircraft and ensuring balanced modernization across both AC and RC is being realized. The Army continues to review near-term aviation funding issues to best align programs, create more executable strategies and identify acceptable risks that allow tailoring of program requirements.

Ground Force Capabilities

Army ground maneuver forces with the capability to obtain a positional advantage and bring overwhelming combat power on the enemy with joint fires are essential to joint warfighting. Committed ground maneuver forces can rob an adversary of initiative and remove their freedom to continue hostilities. Sea, air and space dominance are invaluable,

but only land dominance brings hostilities to a decisive conclusion—establishing and maintaining favorable security conditions for more comprehensive and enduring solutions to complex crises.

Our enemies seek sanctuary by hiding in protected facilities (mosques, churches and hospitals) to make it difficult for the commander who must discriminate among combatants and noncombatants. They create dug-in, camouflaged, concealed, hardened positions in caves or deep bunkers and mask these positions around innocent populations to avoid detection and attack by fires. With battlespace understanding and precision fires, Soldiers on the ground are often the only precise instrument that can locate, track and identify conflicted targets and attack them with lethal, accurate and timely effects using sensors linked to weapon delivery systems, Soldiers and decision makers.

The ground force's dominant maneuver and organic high-volume precision fires coupled with other joint precision fire capabilities for the close fight, will overwhelm the adversary, compelling him to flee his sanctuary or face battle to avoid defeat in detail. In either case, enemy dislocation, disintegration and destruction are inevitable through the combination of maneuver and fires enabled by ground force organic and joint ISR, and precision engagement capabilities.

Employing land force provides additional magnitudes of precision, perhaps impossible by other means, and is particularly effective in demonstrating national resolve. At ranges of just inches to strategic distances, the Soldier functions in the role of a sensor, decision maker, shooter and assessor. To assist the Soldier in these roles, the Army is fielding Tacticomp systems to quick reaction forces, combat patrols and tactical human intelligence (HUMINT) teams in Iraq. The Tacticomp is a handheld device that provides Blue Force Tracking (BFT); video, Voice over Internet Protocol (VoIP) and tactical reporting capabilities via wireless networks. Tacticomps have pick lists for ease of use, a "panic button" to send an emergency alert message and local and remote destroy (zeroize) capability. Tacticomps allow the Soldier to send reports directly into the Joint Intelligence Operations Capability–Iraq (JIOC-I) providing actionable intelligence directly to corps and its subordinates. This will enable quicker response times to tactical intelligence and a greater ability to track trends and identify potential threats.

The individual Soldier is the ultimate sensor. A Soldier observes, listens, feels and processes information. He analyzes, judges, thinks, prioritizes, decides and communicates what he knows and does so in real time. The Soldier is a shooter who designates, directs or calls for precision engagement. He does this from inches to the limit of his technology-enhanced LOS, in all weather conditions and terrain sets. Most importantly, he is disciplined and trained, understands purpose and intent, and can assess, first hand, the battle damage and the effects of precision engagement. In effect, the Soldier on the ground is the ultimate precision weapon.

On the asymmetrical, chaotic and nonlinear battlefield, the Soldier on the ground operates, and will continue to operate, as an indispensable part of the joint team. Today, operations in Afghanistan and Iraq reaffirm the Soldier's role as the centerpiece of our combat systems and formations. Soldiers enable persistent surveillance, reconnaissance and the right combination of maneuver, fires and information operations to achieve precision engagement. Soldiers bring the essential human dimension to warfighting dominance.

They are the centerpiece of our systems and formations, now and in the future.

With the Soldier as our critical link to success, it is imperative to continuously develop Soldier systems that will enhance the Soldier's combat effectiveness. The Army's Soldier modernization program is a critical component to transforming today's Soldier into the Soldier envisioned in the future combat force.

Soldier Modernization

The Army is transforming the way it equips Soldiers. This transformation builds upon the CSA's direction in Oct 03 to "equip all Soldiers with the best possible equipment, and do it before they deploy," and his subsequent emphasis in Dec 03 that every Soldier is a rifleman. In a world in which the Soldier is America's most deployed weapon system, the Army continues to take steps to ensure that, where the individual Soldier has the will, the Army will provide the way.

Individual Soldier and small-team modernization is accomplished through a number of mechanisms. In cooperation with its Army partners, Program Executive Office (PEO) Soldier develops and fields individual clothing and equipment, Soldier sensors and lasers, Soldier small arms and integrated Soldier systems. Each of these product lines is reliant on a healthy Army research and development investment strategy to ensure that the Soldier continues to enjoy combat overmatch in the battlespace of today and tomorrow. Shaping the Soldier of tomorrow is the Army's Soldier as a System (SaaS) concept through which the Army is working to take a more holistic approach to equipping Soldiers by providing integrated, modular systems to the individual warfighter. This vision requires a more integrated and synchronized Soldier system requirements management structure to oversee Soldier systems life-cycle management responsibilities across the Department of Army's capabilities needs, acquisition management and resource allocation processes.

At the tactical level, supporting Soldier processes include the Soldier Enhancement Program, Rapid Fielding Initiative, and Rapid Equipping Force. Headquarters, Department of the Army (HQDA) also effects delivery of Soldier capabilities through its management of the Army clothing bag, retained issue, and central funding and fielding processes.

Soldier Enhancement Program (SEP). SEP is an ongoing (since 1989), congressionally sponsored program that uses its funding resources to improve, develop, miniaturize, test or evaluate items of equipment for military qualification using existing or COTS NDI or offshore sources. If no available sources of improved equipment exists, the SEP Integrated Process Team initiates appropriate development efforts, three years or less, utilizing the most advanced and affordable technology. These developments or evaluations are to modernize, integrate and enhance a Soldier's situational awareness, lethality, survivability, mobility, command and control, and sustainability through accelerated acquisition of lighter, more lethal weapons and improved individual Soldier items, including lighter, more comfortable load-bearing equipment, field gear, survivability items, communications equipment and navigational aids.

Rapid Fielding Initiative (RFI). In an effort to accelerate Soldier system fielding to operational forces, the Army is utilizing the RFI that leverages COTS technology and current SEP/clothing and individual equipment programs. RFI focuses on enhancing several areas of Soldier equipment: lethality (includes enhanced optics, weapon rails, target locators and communications); force

AREA	WHERE WE WERE SEPTEMBER 2003	WHERE WE WERE JANUARY 2005	WHERE WE WERE JANUARY 2006
Body Armor	Estimated 10 percent of Soldiers in Iraq equipped	All Soldiers and DOD civilians in theater equipped; plus 60,000 Deltoid Axillary Protectors issued	All Soldiers and DOD civilians in theater equipped; total of 693,000 Body Armor sets fielded; plus 173,000 Deltoid Axillary Protector sets issued
Up-Armored HMMWV	500 Up-Armored HMMWVs in Iraq and Afghanistan	More than 6,400 Up-Armored HMMWVs in Iraq and Afghanistan	More than 11,100 Up-Armored HMMWVs in Iraq and Afghanistan
Tactical Wheeled Vehicle Add-on-Armor Kit	Contingency mission only	More than 19,000 vehicles in theater have Add-on-Armor kits	More than 37,500 vehicles in theater have Add-on-Armor kits
Armored Security Vehicle (ASV)	No ASVs in theater	Resurrected a terminated program; 82 ASVs in theater	194 ASVs in theater
Bradley Reactive Armor Tile (BRAT)	140 sets delivered; acceleration plan in execution	592 sets delivered	790 sets delivered; acceleration plan in execution
Counter-IED Device	Minimal capability in theater	1,496 systems in theater	More than 23,000 systems in theater
Tactical and Small Unmanned Aircraft Systems	Two systems deployed to theater	128 systems in theater	155 systems in theater
Aircraft Survivability Equipment (ASE)	No fixed-wing ASE; in process of upgrading Black hawk and Chinook aircraft with basic ASE	All theater aircraft upgraded with basic ASE	All theater rotary-wing aircraft to be upgraded with latest Common Missile Warning System
Buffalo	No systems deployed in theater	No systems deployed in theater	44 systems deployed

Figure D-5. Protecting Army Forces

protection/mobility (includes advanced combat helmet, knee and elbow pads, military operations in urban terrain (MOUT) kit); and Soldier mission essential equipment (includes enhanced clothing items, hydration system and modular sleeping system). The RFI was an unprogrammed requirement in FY04 funded with supplemental dollars. In FY06, the RFI funding strategy is to also use supplemental funds to support procurement of RFI-designated items. The RFI campaign plan will field RFI to the operational Army by the end of FY07.

Rapid Equipping Force (REF). REF is an operational activity that provides combat commanders with rapid, cutting-edge solutions that increase lethality, improve force protection and enhance survivability. The REF takes operational guidance from the Army G-3, reports to the Vice Chief of Staff Army (VCSA), and works directly with operational commanders to find solutions to identified equipping requirements. These solutions may result in procurement of new or existing military/commercial materiel equipment, or accelerated development of a future force materiel solution for insertion into the current force now. REF accomplishes its mission by working in partnership with industry, academia, Army senior leaders, the Army Training and Doctrine Command (TRADOC), the Army acquisition community, and the Army Test and Evaluation Command (ATEC) to meet immediate warfighter needs. The REF provides direct support to the Joint Improvised Explosive Device (IED) Defeat Organization and the Asymmetric Warfare Group. REF researches, develops and equips forces in theater with counter-IED material solutions. The REF provides general support to the Army to provide immediate warfighter needs in support of the global war on terrorism. REF solutions include robots like the Packbot and

Marcbot for interrogating caves and suspicious packages for booby traps and IEDs; personnel and vehicle scanning systems; persistent surveillance systems; digital translators for Soldiers to communicate with locals in their own language; explosive material detectors; and much more. REF technologies save Soldiers' lives. REF adaptive practices are at the forefront of Army modernization and serve as a catalyst and change agent for Army transformation.

Discussion of Key Soldier Modernization Programs

Soldier as a System (SaaS)

In Nov 04, the VCSA directed the HQDA staff to establish a management structure to implement the SaaS concept. Over the past year, the Army Staff has led the effort to develop and implement a SaaS management approach that institutionalizes the SaaS concept across the major DOD capabilities needs, acquisition management and resource allocation processes.

The SaaS concept began when the TRADOC submitted a SaaS Mission Need Statement (MNS) to the Department of the Army in Aug 02. This MNS served three purposes. First, it established a formal Army process to address and integrate all Soldier capabilities and needs; second, it identified the need to establish a Soldier modernization strategy that would manage the SaaS; and third, it identified capabilities required of all Soldiers to perform individual and collective tasks. The Army Requirements Oversight Committee (AROC) approved the SaaS MNS in Oct 02. TRADOC subsequently chartered the SaaS Integrated Concept Team (ICT) and assigned proponent lead to the Commanding General, United States Army Infantry Center.

Beginning in May 03, the Chairman of the Joint Chiefs of Staff implemented the JCIDS as the successor to the old Requirements Generation System. One outcome of this decision was the creation of a transition period for capabilities needs documentation in response to a joint concepts-centric, capabilities identification process.

During the transition period initiated with the expiration of the SaaS MNS in Oct 04, the Joint and Army Staffs acknowledged the work and time invested by the SaaS ICT in the development of the MNS and ongoing development of the four complementary integrated Soldier Systems CDDs—core, ground, air, and mounted—and any associated by exception stand-alone Soldier programs. The Joint and Army Staffs agreed to a direct conversion of the SaaS MNS to an ICD. The JROC approval of the SaaS ICD in Oct 05, revalidates the Army's need to recognize the Soldier as a System, and to establish integrated baseline capabilities from which to derive Soldier modernization efforts. Further, it prescribes a methodology to enhance the capability of all Soldiers to perform common core tasks, functions and missions.

Identification and validation of Soldier capability gaps is an ongoing process. Analysis of the lessons learned in recent conflicts (Grenada, Just Cause, Desert Shield and Desert Storm, Iraq and Afghanistan) continues to

identify capability gaps in Soldier lethality, survivability, mobility, sustainability, battle command and situational awareness. Task Force (TF) Soldier, initiated by the CSA in Sep 03, identified 40 critical Warrior tasks and nine battle drills driving the Soldiers capability to shoot, move, communicate, and fight. A Soldier Army Capability Review (ACR) conducted in Feb 04 and a Soldier Budget Operating System (BOS) review conducted in Dec 04 validated these capability gaps. A Nov 04 Army System Acquisition Review Council (ASARC) provided the first Army systems of systems level prioritization of Soldier capability gaps confirmed by OEF/OIF experienced small-unit leaders. The Land Warrior Analysis of Alternatives (AOA) completed in Feb 05 further identified core and ground Soldier capability needs.

SaaS formalizes the need to adjust the methodology by which the Army addresses DOTMLPF issues concerning Soldiers. It documents the need for a chartered organization and process to optimize Soldier effectiveness by fully integrating the Soldier with his equipment. Such a management framework will provide for the development and enforcement of SaaS operational concepts and the capability development process. SaaS addresses equipping the Soldier as an integrated fighting system just as any combat vehicle or aircraft.

SaaS further improves Soldier capabilities by optimizing efforts across the DOTMLPF domains and addressing the need to improve Soldier-machine interfaces to enhance the performance of present and future combat platforms. SaaS utilizes a DOTMLPF capability development assessment of lethality, survivability, mobility, sustainability, and battle command and situational awareness in terms of performance, power, weight, volume, cost, training and criticality of need (the metrics to provide Soldiers with solutions that meet their needs within the boundaries and norms of common human performance and that provide a fully integrated SaaS approach to increase the capabilities of all Soldiers to perform individual and collective tasks).

SaaS provides an integrated strategic plan for Soldier modernization and places the Soldier on the future force modernization path. SaaS will enable Soldier modernization to maintain pace with capstone concepts and other programs using a holistic approach to equipping the Soldier. Treating the Soldier holistically will allow Soldier requirements to compete equally with other major programs for funding and resources. SaaS will increase force capability and effectiveness by optimizing Soldier and combat platform capabilities. The SaaS ICD serves as the lynchpin for the ongoing development of four Soldier capability development documents: core, ground, air, and mounted. These documents specifically address the capability gaps addressed in the ICD. A brief status on capabilities needs approval follows.

Core Soldier. Currently, in the AROC approval process, the core Soldier system provides those clothing bag items and selected organizational clothing and individual equipment required by all Soldiers (basic uniform items, load bearing equipment). The initial operational capability will be achieved with completion of the Army's RFI program in FY07.

Air Soldier. Increment I (Air Warrior) is currently being fielded to the force based on the Mar 04 Joint Requirements Oversight Council (JROC)-approved ORD. Increment I provides air crewmen with Military Occupational Specialties (MOS) specific equipment (NOMEX uniform, flight helmet). Increment II capabili-

ties are under development with the goal of a Feb 06 JROC.

Mounted Warrior Soldier System (MWSS). The AROC approved the MWSS ORD in Mar 04; however, the program is only funded to equip one Stryker battalion in FY06. Like the SaaS MNS, the MWSS ORD has been converted using the JCIDS process and, as a result, it has entered into the AROC approval process. The MWSS provides combat vehicle crewmen with MOS-specific equipment (helmet, NOMEX overgarment). Increment II capabilities are under development with the goal of a Mar 06 JROC.

Land Warrior (LW). An LW Increment I/II Capabilities Production Document (CPD) is currently in the AROC approval process. The CPD supports an LW Stryker Brigade Combat Team (SBCT) limited user assessment in FY06 and provides the pathway for follow-on fieldings to SBCTs. The LW system integrates multiple Soldier systems and components and leverages emerging technologies to provide overmatching operational capabilities to all ground combatant Soldiers, their attachments and small units. These capabilities include increased C2, situational awareness (SA), lethality, mobility, survivability and sustainability. The Increment III (Ground Soldier System) CDD also has entered into the AROC approval process.

EOD Family of Systems. Another area of emphasis to enhance Soldier protection is the family of systems available to Soldiers in the Army's explosive ordnance disposal (EOD) units. These systems are critical to homeland security, force protection and support of the global war on terrorism. They provide EOD Soldiers at home and abroad with the capability to remotely examine, identify and render safe ordnance and IEDs effectively and safely. Lessons learned from OEF and OIF have increased the awareness and priority of EOD systems. Production of the Manual Transport Robotic System (MTRS) began in Sep 05. Future acquisitions will include the Submunitions Clearance System (SCS) and the Medium Directional Energy Tool (MDET) of the Large IED Countermeasures Family of Systems. MTRS and SCS are modified commercial acquisitions. MDET will be commercially produced from a government-developed drawing package and specification. SCS and MDET are new critical capabilities; MTRS provides an improved capability.

Combat Identification (CID). CID measures enhance Soldier protection and overall combat effectiveness by minimizing fratricide incidents. As a result of lessons learned during Operation Desert Storm (ODS) and past CID efforts, significant progress has been made to reduce fratricide. In OEF and OIF, the widespread use of thermal and infrared marking devices (combat identification panels (CIPs), thermal identification panels (TIPs), Phoenix infrared lights, as well as GPS systems, BFT systems, and Force XXI Battle Command Brigade and Below (FBCB2)) has significantly reduced fratricide incidents through an improved ability to locate and identify friendly forces on the battlefield.

These systems, combined with other CID measures such as tactics, techniques and procedures (TTP), rules of engagement (ROE), and incorporation of fratricide prevention training into institutional, individual

and collective training environments, are critical to minimizing fratricide in today's fast-paced, nonlinear, distributed, simultaneous, offensive-oriented battlefield environment. An interactive vehicle recognition training device called Recognition of Combat Vehicles (ROC-V) is being made available to Soldiers at all levels. ROC-V is issued on a CD for use on a personal computer to display visual and thermal imagery of vehicles. It also provides for self-assessment. Army Combat Training Centers (CTCs) have put in place measures to assess combat identification and situational understanding during unit rotations, and an aggressive program for capturing, reconciling, and leveraging lessons learned from OIF, OEF and CTCs to improve TTP, training and doctrine, and CID is a major focus area at the Center for Army Lessons Learned.

In FY02, due to affordability issues, the Army terminated the Battlefield Combat Identification System (BCIS) program that had been initiated following ODS to improve current force CID capabilities. The millimeter wave technology developed under that program was directed to be transferred to future force development efforts. In an effort to reinitiate a CID program, the Army G-3/G-8 in 2003 established a CID Overarching Integrated Process Team (OIPT) to provide an updated and approved CID concept and strategy, a CID action plan for current and future forces in a joint, interagency and multinational (JIM) environment, and a funding strategy to support an integrated DOTMLPF CID program in the FY08-13 FYDP that leverages advanced technology. Additionally, the Army Science Board was tasked by the Army Acquisition Executive to conduct a parallel, ad hoc CID study to assist the Army Staff in their review and synchronization of CID efforts.

In March 2004, the Army Marine Corps Board (AMCB), cochaired by Army G-8 and the U.S. Marine Corps Assistant Deputy Commandant, Programs and Resources and including three-star principals from the Army and Marine Corps staffs, conducted a review of CID efforts in the Army and Marine Corps and directed that a DOTMLPF-based study be conducted to develop recommendations of banded investment strategies for AMCB consideration.

The AMCB reviewed the CID study results in August 2004 and approved investment recommendations for CID that included the resourcing of low-cost/high-payoff improvements in DOTMLPF, equipping of 800 Abrams key leader tanks with second-generation FLIR, and continued procurement of the Joint CID Marking System (JCIMS)—thermal and infrared marking devices—for "go-to-war" requirements in support of United States Central Command (USCENTCOM) Operational Needs Statements.

The AMCB also agreed to support the ongoing Coalition Combat Identification Advanced Concept Technology Demonstration (CCID ACTD) S&T effort and to defer any decision on a CID technology until completion of the CCID ACTD. This U.S.-led multinational effort is designed to evaluate the military utility of advanced technologies to improve CID, minimize fratricide incidents, and provide increased combat effectiveness in joint, allied and coalition operations and includes the United Kingdom, France, Germany, Italy, Canada, Sweden, Denmark and Australia as participating partners.

The following candidate technologies were evaluated in the CCID ACTD: Battlefield Target ID Device (BTID) that consists of millimeter wave interrogator, millimeter wave transponder and communication-electronics unit; Optical Combat ID System (O-CIDS) that consists of a laser interrogator and optical

retro-reflector transponder; radio-based CID (RBCI) that consists of software modification to Single Channel Ground and Airborne Radio System (SINCGARS) Advanced System Improvement Program (ASIP), which enables shooters to interrogate areas of interest and receive replies from friends; and radio frequency (RF) tags, which are small electronic devices that detect radar signals, modulate the signal with CID data, and return the signal to the radar display.

CCID ACTD operational demonstrations were completed in the fall of 2005, and the operational manager, Joint Forces Command, is scheduled to provide military utility assessments for each of the technologies by March 2006. The AMCB will use the military utility assessments along with life-cycle costs estimated to make decisions regarding future CID investments for the Army and Marine Corps.

The Army's RFI, REF, EOD, CID and a host of other equipping efforts are challenging existing assumptions and processes to demonstrate a commitment to equipping Soldiers with the best equipment available and providing relevant and ready forces to the Combatant Commanders. We are an Army at war and will meet the current demands while always changing to meet future challenges.

Ground Soldier System (GSS)

Description. The GSS is a modular, integrated fighting system for ground combatant Soldiers that integrates many components and technologies into a lethal, survivable, mobile and more situationally aware Soldier system. Land Warrior systems/components include:

- Helmet subsystem with color helmet-mounted display and audio headset and microphone
- Weapon subsystem with day light video sight and multifunctional laser with digital compass
- Communication, navigation and computer subsystems
- Soldier control unit
- Enhancements to protective clothing and individual equipment

The systems approach optimizes and integrates these capabilities, to include interface with the Army Tactical Internet, while reducing the logistical footprint. S&T advances in warfighting concepts, system-of-systems (SoS) architectures, and technology components in areas such as enhanced navigation, system voice control, weight reduction, digital connectivity and power are being pursued through the Future Force Warrior (FFW) Advanced Technology Demonstration (ATD) and will be inserted over time as the technology matures to meet GSS requirements. The FFW ATD is also charged with developing an analysis-of-variants system design concept that will enable expansion of the FFW concept to the other Soldier variants. This concept will contain design hooks and interfaces common to all Soldiers, providing a tailorable and reconfigurable SoS design extensible to all Soldiers.

Program Status. The LW II (Stryker interoperable) program has been restructured to accommodate redefined current force requirements. The Army will provide enhanced situational awareness/battle command and lethality capability to small, tactical units in the near term. The Army is testing LW II ensemble variants as potential solutions. In FY06, the Army will equip an SBCT task force with LW II (440 systems) and Mounted Warrior (MW) (147 systems) to conduct a DOTMLPF assessment, which combined with other lim-

ited user tests (LUT) will support a milestone decision in FY07. In the far term, the program is focused on the GSS development. GSS incorporate developing technology advances

to improve LW system capabilities. Throughout the LW development, the Army will seek opportunities to field mature capabilities to the force early, before the fully integrated LW/GSS system is available for fielding.

Mounted Warrior (MW)

Description. The MW Soldier System (MWSS) provides the dismounted and mounted combat crew members with uninterrupted viewing of their immediate surroundings while remaining connected to onboard platform command, control, communications, computers and intelligence (C4I) capabilities, thereby providing crews with continuous situational awareness and communications with platform and dismounted Soldiers. The MWSS ensemble includes a helmet subsystem (advance combat helmet, head-mounted display for vehicle commanders, and improved audio headset and microphone); cordless communications; protective clothing/individual equipment subsystem (crew member overgarments; gloves; footwear; ballistic protection; chemical/biological (CB) protective mask; CB protective overgarments; CB protective gloves and footwear; and ballistic/laser, sun, wind and dust eye protection).

Program Status. The Army is buying 147 MW systems for a DOTMLPF assessment in FY06.

Air Warrior (AW)

Description. AW is a Soldier system for helicopter crewmen that provides a new generation of integrated, mission-tailorable, combat-effective life support equipment and chemical/biological protection with reduced weight/bulk designed to improve aircrew endurance, mobility and performance. AW significantly improves flight time in Mission Oriented Protective Posture (MOPP) 4 gear from 1.6 to 5.3 hours. Air Warrior systems/components include:

- Microclimate cooling system that includes a microclimate cooling garment (MCG) and a small microclimate cooling unit that chills water and pumps it through small tubes embedded in the MCG
- Survival equipment subsystem that includes a survival gear carrier, soft and hard body armor, thigh holster and survival knife in ankle sheath
- Interim Modular Integrated Helmet Display System (MIHDS) with laser eye protection and a night vision device mount
- Over-water survival subsystem that includes a personal flotation device, survival egress air (breathing oxygen), and an

inflatable raft (LRU-18U) that is integrated into the ensemble and worn by the crew member

- Nuclear, biological and chemical (NBC) protection with a modified chemical protective undergarment, M45 or M48 protective mask with blower unit, gloves and overboots
- Aviation clothing items that include modified aircrew battle dress uniform (BDU) and the Aircrew Cold Weather Garment System

Future AW system spiral development improvements focus on the technology insertion of improved and/or enhanced components reflecting emerging technologies defined in AW Blocks 2 and 3.

Block 2 developmental efforts are underway and will add an Aircraft Wireless Intercom System (AWIS) and the Electronic Data Manager (EDM). The AWIS will enhance crew member performance by providing the capability for wireless communications within the aircrew and with ground crew or ramp support personnel such as in a tactical forward area rearm and refueling point (FARRP). The EDM, in the form of a digital kneeboard, will provide a capability to the aircrew to generate, store, display and distribute digital information and will interface with BFT systems.

Block 3 efforts will increase performance and capabilities by adding a fully compliant MIHDS helmet. The MIHDS helmet will provide, as a baseline, the same safety performance characteristics as the HGU-56/P helmet (impact, sound attenuation, retention, etc.). The MIHDS will be tailorable and compatible with the Apache helmet-mounted displays and head tracking technologies and will also provide an improved day/night helmet-mounted display symbology for those aircraft that currently lack this feature. These helmet-mounted displays will be compatible with aircrew prescription spectacles, CB protection, oxygen masks, laser eye protection and nuclear flash protection technologies. CB protection will be donned in-flight without removing the helmet.

Program Status. AW Block 1 production began in FY03 and fielding began in 2QFY04 to the 3-4 Cavalry. Block 2 development began in FY02 with equipping for some units beginning in FY05. Block 3 development began in FY04.

Enhanced Night Vision Goggles (ENVG)

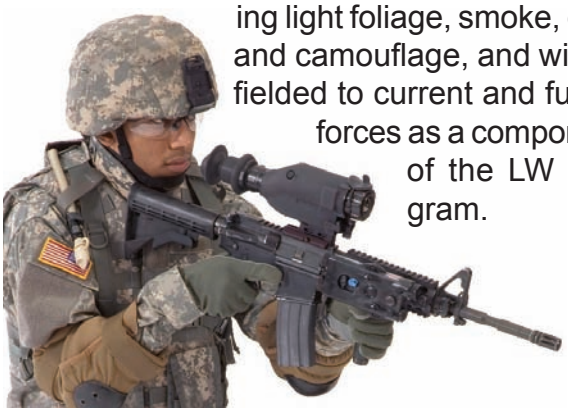
Description. The next generation of night vision goggles for the Soldier is the ENVG. It combines both an uncooled thermal and an image-intensification (I2) capability into a single integrated device. ENVG improves Soldier situational awareness by providing the capability to rapidly detect and recognize man-sized targets while simultaneously maintaining the ability to see detail and to use rifle-mounted aiming lights. The ENVG provides Soldiers with the ability to engage and execute close combat in all levels of light, to include the zero-illumination conditions found in caves and underground environments, adverse weather conditions and under battlefield obscurant conditions. This is a system component of the Soldier Warrior programs.

Program Status. The ENVG is currently in developmental testing with reliability tests scheduled for 1Q-2QFY06. Contractor pre-qualification testing will be performed concurrently. A combined developmental testing/operational

testing (DT/OT) is scheduled for 3QFY06 with a Milestone C decision to follow in 4QFY06.

Thermal Weapon Sights (TWS)

Description. Thermal Weapon Sights are a family of low-cost, lightweight, man-portable IR imaging devices of high resolution to be used for surveillance and fire control of individual and crew served weapons during both daylight and darkness. TWS operate in adverse weather and dirty battlefield scenarios including light foliage, smoke, dust and camouflage, and will be fielded to current and future forces as a component of the LW program.



Program Status. The TWS program is in FRP with more than 19,000 light, medium and heavy systems having been fielded. Next generation Thermal Weapon Sights II are currently completing DT and LUT. TWS II systems offer improved performance in a lighter-weight, lower-cost package. TWS II system fieldings will commence 2QFY06.

XM307 Objective Crew Served Weapon (OCSW)

Description. The XM307 is a close combat support weapon that will enable Soldiers/platforms to quickly react with a high-volume fire against troops in the open and in defilade and lightly armored vehicles. The XM307 will provide the ability to engage targets out to 2,000 meters under day/night and adverse weather conditions while stationary and on the move, and at elevations from -20 degrees to +60 degrees. The XM307 will fire high-explosive

airburst, armor-piercing and nonlethal ammunition. The XM307 weighs approximately 50.3 pounds. The dismounted version of the XM307 includes a lightweight tripod with a traverse and elevation (T&E) mechanism capable of providing high weapon portability and rapid target engagement. It also includes a full-solution fire control that includes direct-view optics, full-solution ballistic calculation, digital range finder, CCD video, tracker module, digital compass, environmental sensors, as well as many other options. The remote operating variant (ROV) of the weapon will have an automatic ammunition feeding system, to include a dual feeder capable of a first-round response.

The XM307 is being considered to replace selected M2 and MK19 grenade machine guns. The Army is still conducting mission analysis and completing capabilities documentation for this system.

Program Status. The XM307 program transitioned from the tech base in FY04. The Milestone C decision for the ROV is scheduled in 1QFY09.

Lightweight Laser Designator Range Finder (LLDR)

Description. The LLDR is a man-portable, modular, target location and laser designation system. The system consists of a tar-

get locator module (TLM) and a laser designator module (LDM). LLDR provides Soldiers with a man-portable capability to observe and accurately locate targets, digitally transmit target location data to the tactical network, and laser-designate high-priority targets for destruction by precision munitions. LLDR greatly increases the ability to recognize targets at night and under battlefield conditions.

Program Status. LLDR is currently in FRP. Conditional material release is expected in 2QFY06.

Nonlethal Capabilities Sets (NLCS)

Description. The shifting military environment is likely to see greater mixing of enemy combatants with noncombatants and there are likely to be situations where deadly force is undesirable. Nonlethal capabilities are a family of systems that employ means other than gross physical destruction to prevent, disrupt, incapacitate, disable, neutralize or impede the target from functioning while minimizing unintended casualties and collateral damage. These include weapons commonly referred to as nonkinetic, less-than-lethal and/or low collateral damage weapons.

The NLCS can be rapidly deployed by military transport or commercial carrier. NLCS consists of six categories: counterpersonnel systems, countermateriel systems, protective equipment, enhancement devices, training devices/allocations and support equipment.

Program Status. The NLCS is being fielded to units supporting and preparing to support OIF/OEF. The initial fielding of 96 sets were delivered in summer 2005 with additional sets being procured during the FY06-11 program plan cycle.

Ground Force Modernization

Annex B, Organizations, of the *2006 Army Modernization Plan* provides details on the Army's two primary ground force modernization efforts, the accelerated development and fielding of seven SBCTs from 2001 to 2008 and the Future Combat Force Strategy aimed at the development and initial fielding of a maneuver brigade equipped with FCS to bring future modular force capabilities into the current force. The Unit Set Fielding process will field these units with capabilities achieved from a complete set of unit equipment. Under the SoS approach, the unit must demonstrate the ability to operate interdependent systems together to achieve an IOC for the unit. In FY03, the first SBCT completed fielding and operational testing to achieve IOC. Since then, both the second and third SBCTs have also been fielded and deployed for operational missions in Iraq. Part of the modernization effort is the transformation of the current force to modular BCTs that are similar in organizational structure to the SBCT organization. The BCT will serve as the base unit for the spin-out fielding that will accelerate FCS technologies into the force.

Stryker Brigade Combat Team (SBCT). The SBCT is inherently a precision unit. The force design of the SBCT provides the Army with dominant maneuver and precision engagement capabilities not found in any other Army brigade-sized unit. Specifically, the RSTA squadron, equipped with unmanned aerial vehicles (UAVs) and ground-based HUMINT specialists, provide the commander

with unequalled situational understanding. The networked command and control architecture that features FBCB2, allows the commander to provide the same picture to lower echelons and major combat platforms, such as the Stryker vehicle, thereby establishing a real-time friendly force operational picture for the unit. The SBCT also features organic, ground-based sniper teams—the essence of precision strike and a critical combat requirement that has once again been validated during the ongoing war against terrorism.

The SBCT's force application capability is truly global. C-130 transportable, the unit can rapidly deploy to austere environments, thereby overcoming enemy area-denial and anti-access efforts, and can quickly mount offensive operations with minimal reception, staging and integration. Although it excels in the midpoint of the operational spectrum, it can fight effectively as a fully committed unit in major engagement and battles with augmentation (such as attack aviation and/or rocket artillery). With its superior tactical mobility and excellent battlefield situational awareness, the SBCT can also execute difficult security missions such as guard, cover, screen, counterreconnaissance and rear-area combat operations. The superior off-road maneuverability of the Stryker vehicle, combined with its dismounted infantry assault capability featuring robust anti-tank weaponry, ensures the SBCT can very effectively engage and destroy enemy armor in close, complex and/or urban terrain.

The Army is currently benefiting from the capability of the SBCT in operational missions in Iraq. The unit is maximizing the capabilities of this transformational organization in combat operations. Examples are increased speed (60+ miles per hour) and survivability (protection against rocket-propelled grenades (RPGs) and IEDs) provided by the Stryker family of vehicles in the brigade; near-seamless situational awareness down to the combat vehicle crew level allowing quick execution of changing missions; high rate of reliability of the Stryker vehicles; and high confidence in the vehicle and its capabilities by the Soldiers in the brigade.

The capabilities of the SBCTs will be operationally enhanced when the remaining two variants, the Mobile Gun System (MGS) and the NBC Reconnaissance Vehicle (NBCRV) are fielded in FY06 and FY07. The MGS provides rapid and lethal direct fire to support assaulting infantry and the NBCRV provides NBC situational awareness to increase the combat power of the BCT.

Future Combat Force Development

The future combat force concept embodies precise and dominant maneuver coupled with precision engagement through a combination of maneuver, fires and information dominance. As an offensive-oriented force, it conducts operational maneuver from strategic distances, executing synchronized, distributed operations as part of a joint force to destroy key enemy capabilities in a distributed, nonlinear battlespace. It provides seamless C4ISR, FCS, integrated sensors, attack and reconnaissance helicopters, expanded maneuver and fires with standoff, LOS and non-line-of-sight (NLOS) capabilities. These

attributes enable the Joint Force to achieve total disintegration, dislocation and destruction of enemy forces from tactical through operational levels. Direct lethal action will contribute to the following joint efforts:

- Destroy and degrade enemy anti-access systems such as long-range missiles and artillery, unconventional forces, enemy surveillance and targeting capabilities
- Participate in the destruction of enemy precision engagement systems. This represents a key task, given the significant threat that enemy systems represent to Joint Force freedom of action and maneuver
- Seize key terrain and facilities required to support force flow and decisive operations, extension of the area of influence, and isolation of enemy forces
- Degrade key enemy capabilities (C4, ISR, and logistical structures) essential to enemy offensive operations
- Provide essential C4, ISR and logistical support to the Joint Force
- Support the Joint Force commander's information operations to gain momentum superiority

FCS-Equipped Maneuver Brigade. Although the Army has not finalized a complete future combat force design, it has approved an organizational and operational (O&O) plan for a maneuver brigade equipped with FCS.

This brigade's organizational design includes UAS at each echelon to enhance the organization's RSTA capability. This capability is viewed as essential to the success of brigade operations to build and maintain situational awareness and understanding before, during and after tactical operations. An aviation squadron within the brigade will integrate with UAS to provide a robust reconnaissance capability with manned and unmanned aviation (man-in-the-loop) in support of the brigade mission. Additionally, they will engage to destroy high-payoff or most dangerous target sets with organic weapons or by employing external networked fires under brigade control.

The NLOS battalion is the brigade's primary provider of destructive, suppressive, protective and special purpose fires that enable the brigade to conduct decisive operations. It is envisioned that the NLOS Cannon (NLOS-C) will provide accurate, reliable, responsive, on-demand, 24-hour, all-weather, all-terrain and close-supporting fires with a wide array of precision and nonprecision munitions. The NLOS Launch System (NLOS-LS) provides a networked system of missile launchers with command and control systems that will provide both precision and loitering attack munitions. NLOS Mortar (organic to the combined arms battalion) will also provide supporting fires to the brigade. The combination of NLOS Mortar, Cannon and Launch Systems in the brigade, and High Mobility Artillery Rocket System (HIMARS) in the division will provide the future commander with a greatly increased precision and lethal capability.

Discussion of Key Ground Force Materiel Programs

Abrams Tank

Description. The Abrams tank modernization strategy supports the Army Campaign Plan by providing the Abrams tank the lethality, survivability and fighting ability necessary to defeat advanced threats well into the future. The Abrams tank closes with and destroys enemy forces on the integrated battlefield using mobility, firepower and shock effect.

The 120-mm main gun on the M1A1 and M1A2 family of vehicles, 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, and has proven it's lethality in urban operations during Operation Iraqi Freedom in support of the global war on terrorism. The Abrams recapitalization program is a modernization program focused on the current heavy armored force and seeks to ensure the Abrams main battle tank remains relevant to the developing future combat force.

The Army has a recapitalization procurement and modernization strategy under the Abrams Integrated Management (AIM) program that provides M1A1 tanks with rebuilt AGT1500 engines and improvements to selected tank subsystems that bring the tanks to a zero-hours/-miles rebuild condition. The AIM program provides selected technology insertions designed to extend the service life of the fleet while reducing O&S costs. Some of these improvements include revised hull and turret network boxes, a digital electronics control unit, a driver's hatch interlock sensor system, an upgraded tank commander's panel, an eye-safe laser range finder, a pulse jet air system, and a battlefield override (mechanical fuel and transmission bypass) system. A development and integration effort leading to the insertion of a single second-generation thermal sensor in the gunner's primary sight is currently underway.

The M1A2 SEP program began in FY99 and selectively upgrades M1 tanks or retrofits M1A2 tanks with rebuilt critical components that bring the tanks to a near zero-hours/zero-miles condition. M1A2 SEP tanks have a second-generation FLIR sensor in the commander's independent thermal viewer (CITV) to enhance target acquisition and significantly improve lethality, hardware and software that supports Army digitization and the FBCB2 system, digital diagnostics system that enhances tank maintenance and sustainment, thermal management system that reduces the tank's battlefield signature, and an improved armor system that improves survivability against emerging threats.

The Abrams modernization strategy also includes a major improvement program for the current AGT1500 engine coined the Total Integrated Engine Revitalization (TIGER) program. This effort serves to execute an integrated program that will sustain the AGT1500 engine for the benefit of the entire Abrams tank fleet with an average mean time between depot replacement (MTBDR) of 1,400 hours. The TIGER program establishes a single standard for overhauled engines, addresses current readiness issues, improves durability, reduces O&S costs and implements automated data collection in support of fact-based maintenance decisions. The development of the TIGER program continued through FY05, with procurement beginning in FY06.

Program Status. The Army completed fielding of M1A2 SEP tanks to the 4th Infantry Division (ID) and the 1st Cavalry Division. Efforts are underway to field M1A2 SEP tanks to the 3rd Armored Cavalry Regiment beginning in FY06. Currently, the Army is projected

to procure 803 M1A2 SEP tanks. The Army completed fielding M1A1 AIMs to 2nd ID and modernization of the ARNG continues through cascading of M1A1 AIM tanks from the AC.

Bradley Fighting Vehicle

Description. The Bradley recapitalization program rebuilds and upgrades M2/M3A2s to the most modernized M2/M3A3 configuration. The A3 adds two second-generation FLIR devices (one in the commander's independent viewer (CIV) and one in the improved Bradley acquisition sight (IBAS)), a position/navigation (POS/NAV) system, core electronic architecture, and digital C2. These upgrades improve the crew's ability to navigate, pinpoint and identify friendly and enemy positions, and engage two separate targets nearly simultaneously in both day and night conditions. Also, the digital C2 provides a near real-time integrated data link between the M2A3 and other combat vehicles and headquarters.

Program Status. The 1st Cavalry Division and 4th ID will be fielded with M2A3 Bradleys in FY07. The 3rd ACR will be fielded with recapitalized Bradley cavalry/scout vehicles. Selected III Corps engineer battalions will be fielded with 342 converted M3A2 ODS-D vehicles. The Army engineer companies will be fielded with Bradley ODS-E vehicles. These digitized vehicles will vastly improve the lethality, survivability and situational awareness for the engineers and supported units.

Stryker Family of Armored Vehicles

Description. The Stryker Family of Armored Vehicles is the centerpiece combat and combat support platform for the SBCTs. Two variants of the Stryker will be fielded: the Mobile Gun System (MGS) and the Infantry Carrier Vehicle (ICV). There will be eight additional configurations of the ICV: Reconnaissance Vehicle (RV), Mortar Carrier (MC), Commander 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). Stryker capabilities include:

- Strategically responsive and deployable on the complete U.S. Air Force (USAF) family of transport aircraft, C-130 and larger
- Roll-on/roll-off combat capable with minimum preparation
- Superior situational awareness with internetted/networked communications
- Survivability enhanced by all-around 14.5-mm armor piercing and 152-mm artillery airburst protection (add-on armor provides protection against RPG anti-tank weapons)
- Accurate target acquisition with Long-Range Advanced Scout Surveillance System (LRAS3) mission package

- Accurate target engagement with Remote Weapon Station (MK19 grenade launcher and/or M2 .50 caliber machine gun)
- Decisive offensive action with dismounted infantry assault (ICV)
- Bunker-busting capability with 105-mm cannon (MGS) for roles in immediate fire support of dismounted infantry operations and with tube-launched, optically tracked, wire-guided (TOW) bunker-buster munitions (ATGM)
- Responsive indirect fires with 120-mm mounted mortar (MC)
- Anti-tank capability with TOW 2B (ATGM) and Javelin-equipped dismounted infantry (ICV)
- Mobility enhanced by mine plow, roller and detector (ESV)
- Integrated NBC sensor capability (NBCRV)

The Stryker provides a unique family-of-systems approach that maximizes commonality and integrated capabilities while filling an immediate capabilities gap in the current force. Supporting Stryker fielding is a complete new home station equipment training package for both operators and maintainers.

Program Status. Planned procurement is for 2,559 vehicles consisting of two variants: ICV and MGS. The Stryker program obtained an FRP decision on seven of the 10 variants in Feb 04; these include the ICV, RV, CV, FSV, ESV, MEV and ATGM. The Army has funded, and the Secretary of Defense (SECDEF) has authorized, the procurement and fielding of seven SBCTs to fulfill the defense strategy and national security requirements.

Lightweight 155-mm Howitzer (M777)

Description. The Army has a requirement for an advanced, towed, lightweight 155-mm howitzer, with self-locating and aiming capability, that meets increased operational thresholds for mobility, survivability, deployability and sustainability. The M777 lightweight 155-mm howitzer is funded in the FY07-11 program plan as a weapon system that meets this requirement. A joint USMC/Army program, the M777 will provide accurate, reliable, responsive, on-demand, 24-hour, all-weather and all-terrain close support fires to maneuver forces.

Program Status. In Nov 02, the M777 entered LRIP for 94 USMC nondigitized howitzers to be delivered in FY04 and FY05. The FY07-11 program plan funds the procurement and fielding of the digitized, self-locating, self-aiming/-pointing upgrade of this system (M777E1) to selected Army units, beginning with the SBCTs in FY06-08. USMC howitzers will be retrofitted for the digitized upgrades once fielding to Army units begins. A successful multi-Service operational test and evaluation (OT&E) was completed in Nov 04. The program received authorization to move forward with multi-year production from the Assistant Secretary of the Navy, Research, Development and Acquisition (ASNRDA) on

23 Feb 05, and a four-year multi-year production contract was awarded to BAE Systems on 22 Mar 05. Fielding to USMC artillery units is currently in progress. The first Army unit fielded will be SBCT 5 commencing in 4QFY06.

M119A2 Lightweight 105-mm Towed Howitzer

Description. The M119A2 has been in service since 1989 and is used by the Army's light forces to fulfill the direct support artillery mission within those units. The decisions to pursue modularity and convert the ARNG to a pure fleet of M119A2s (and remove the M102 from inventory) have roughly doubled the Authorized Acquisition Objective (AAO) for M119A2s to 814 systems. This requirement has driven the need to reenter production and produce 432 additional M119A2s. Furthermore, an Army Force Generation (ARFORGEN) alignment has been recommended to upgrade and return currently fielded M119A2 assets to a fully serviceable condition . These assets in most instances have been to theater at least once, if not more. This effort will have the effect of reducing O&S costs to the AC where the usage rates are the highest and provide the ARNG with fully serviceable and upgraded weapons.

Program Status. Funding to begin the program and initiate production was received in the FY05 Supplemental. A make/buy decision was made to produce the howitzers at Rock Island Arsenal. Using the FY05 Supplemental funding, long-lead materials have to be placed on order and manufacturing activities to produce the initial year's order quantity of 35 weapons have begun. The first delivery of a complete new production M119A2 is currently scheduled for Apr 07. After production testing is completed, materiel release is expected by the end of 1QFY08. Fieldings would then commence in 2QFY08.

Future Combat Systems (FCS)

Description. The core of the future combat force's maneuver brigade is the FCS, comprised of 18 manned and unmanned platforms centered around the Soldier and integrated by a secure battle command network. FCS will provide Soldiers with significantly enhanced situational awareness—enabling them to see first, understand first, act first and finish decisively. This allows the Joint Force to achieve overmatching combat power with the lethality, agility, sustainability and versatility necessary for full-spectrum military operations from small-scale contingencies to stability and support operations to major combat.

The FCS comprises a family of advanced, networked, air- and ground-based maneuver, maneuver support and sustainment systems. FCS employs a revolutionary, integrated architecture to help meet the commander's requirements. These networked capabilities include networked communications, networked operations, sensors, battle command systems, training platforms, and both manned and unmanned reconnaissance and surveillance capabilities. These capabilities will enable improved situational understanding and operations at a level of synchronization heretofore unachievable.

Program Status. The first major step for the FCS was achieved in May 03 with the successful approval of the Milestone B decision. This decision confirmed the feasibility of technology and initiated implementation of the original acquisition strategy to achieve an IOC in 2010 and a full operational capability (FOC) by 2012. In Jul 04, the FCS program was restructured to reduce program risk while simultaneously improving the current force

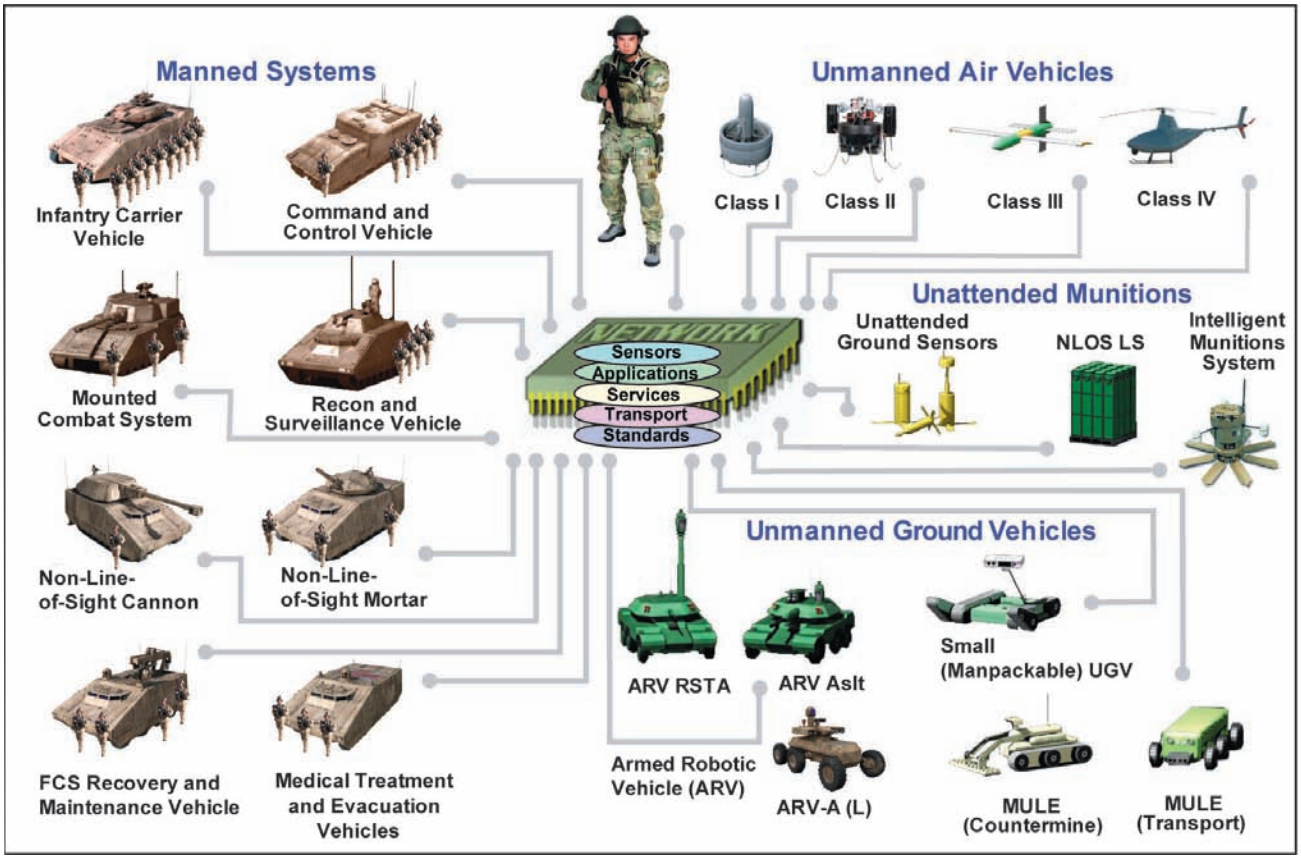


Figure D-6. Future Combat Systems

with the insertion of FCS technologies that will close current force capability gaps while maintaining the Army's focus on FCS development. This will result in an FCS-equipped brigade (all 18 + 1 systems) IOC in 2014 and FOC in 2017. The acceleration of FCS technologies will be accomplished by a series of four spin outs into modular BCTs (heavy, infantry and Stryker).

The first of four spin outs will begin in FY08 with test and evaluation (T&E) by a single current force unit (evaluation BCT or EBCT) that will serve as the consistent organization for the development and evaluation of FCS-related systems. Spin Out 1 will start fielding to the current force in FY10. Subsequent spin outs will be fielded initially to the EBCT, then to select current force modular BCTs. The priority of the spin-out effort is initially to the network, unattended munitions and sensors, and unmanned systems. Elements of the network will be spun out into each of the four spin outs. Manned Ground Vehicle (MGV) development will be extended to meet the 2014 IOC date for the first FCS-equipped brigade. However, the NLOS-C will lead MGV development and deliver prototype NLOS-C systems in 2008 and begin fielding Block 0 NLOS-C systems in 2010.

Non-Line-of-Sight Cannon (NLOS-C)

Description. The NLOS-C is currently embedded in the overall FCS program architecture. The NLOS-C will provide accurate, reliable, responsive, on-demand, 24-hour, all-weather and all-terrain close supporting fires as an integral part of the future combat force. It will utilize the Modular Artillery Charge System (MACS) and inductively set fuses, such as the M762/A1, M767/A1 and multiple

option fuze, artillery (MOFA). As the primary fire support asset available to the FCS maneuver brigade commander, it will provide sustained fires capability for both precision (Excalibur) and area fires (suppression) to forces in combat and are networked to joint fires. Its networked capability and high rate of fire enable it to provide rapid fires at extended ranges. System development will be integrated with the development of a suite of munitions and complementary ISR capabilities that locate, track, identify, engage and destroy all target types with effects scaled by the mission and target set.

Program Status. The Army, in partnership with the Defense Advanced Research Projects Agency (DARPA) established in 2002 an aggressive, collaborative demonstration program in support of the FCS initiative. This demonstration included both live-fire and mobility phases. NLOS-C transitioned to SDD as a component of FCS. The Army is working to comply with the law to field the NLOS-C starting in FY10. The Army will deliver eight prototype NLOS-C systems in 2008 to support the FY10 fielding. Additionally the NLOS-C will influence the MGV risk reduction efforts, early user evaluation by the EBCT and system level testing. Test firing of the NLOS-C system demonstrator continues at Yuma Proving Ground, AZ, as well as proof of concept demonstrations for vehicle weight, and the hybrid electric drive risk reduction. The NLOS-C mission module and four common (propulsion, suspension, environmental control and vetronics) subsystems enter detailed design in late 2005 in support of prototype deliveries beginning in 2008.

Non-Line-of-Sight Launch System (NLOS-LS)

Description. The NLOS-LS is a core program of the FCS and is a networked system of missile launchers with an integrated command and control system that will provide precision and loitering attack munitions (PAM and LAM). It will provide accurate, reliable, responsive, on-demand, 24-hour, all-weather and all-terrain fires as an integral part of the future combat force. NLOS-LS will provide networked, extended-range targeting and precision attack of armored, lightly armored and other stationary and moving targets during day, night, obscured and adverse weather conditions. The system's primary purpose is to provide responsive precision attack of high-payoff targets (HPT) in support of the FCS maneuver brigade in concert with other FCS maneuver brigade NLOS systems as well as other Army, JIM system capabilities. The PAM has the ability to provide a discriminating capability via automatic target acquisition (ATA) and contribute to BDA. Future planned improvements include the addition of low-cost, tri-mode capability to the PAM. The system has flexibility to respond to all FCS maneuver brigade sensors, SOF, and other division, joint and multinational elements. The NLOS-LS will be a self-contained system with multifunctional munitions capability. The system will be capable of multimodal transport and be fired from the ground or from manned/unmanned tactical transport vehicles. NLOS-LS consists of the container launch unit (CLU) housing individual containerized munitions, PAM and LAM, and an onboard command and control capability. The system has an external mission planning software application designed

to operate on the future battle command system for planning and execution of multiple and simultaneous missions, including engagement with different munitions.

Program Status. The NLOS-LS transitioned to an Army SDD effort in FY04. An NLOS-LS Project Manager's Office was formed in Jul 05 under PEO Missiles and Space to facilitate the transition and coordinate actions to ensure initiation of NLOS-LS Block I SDD. The system will be fielded to the EBCT in limited quantities in 1QFY08 with the PAM capability. The LAM is still in the concept and technology development stage. Program Milestone C and LRIP are in FY09.

High Mobility Artillery Rocket System (HIMARS)

Description. The M142 HIMARS provides joint early entry forces, SOF and BCTs with continuous highly responsive, all-weather, precision, medium- to long-range rocket and missile fires to a depth of 300 km. HIMARS units are organic and assigned to modular fires brigades that provide integral fire support for BCTs. HIMARS fills the gap in range between direct-fire systems, short-range artillery systems, and longer range air systems. Mounted on an Family of Medium Tactical Vehicles (FMTV) chassis, HIMARS is C-130 transportable and combat loaded, and provides full Multiple Launch Rocket System (MLRS) family of munitions (including GMLRS and ATACMS) capability, yet requires 70 percent fewer airlift resources to transport than the current M270 MLRS launchers. HIMARS Advanced Concept Technology Demonstration (ACTD) prototype launchers were successfully employed in OIF, providing precision fires in support of USSOCOM and USCENTCOM operations. Firing GMLRS-Unitary precision rockets, HIMARS can support to a range of 70 km with low-collateral damage that enables the effects to be within danger-close proximity to friendly forces (within 200 m), as well as engaging targets in urban and complex environments. Employing ATACMS Quick Reaction (QR) Unitary, HIMARS can extend low-collateral precision attack to 270 km.

Program Status. HIMARS is type classified standard and is in FRP. The 3-27 Field Artillery, XVIII Airborne Corps, FUE, will become fully operational during 1QFY06. Subsequent HIMARS fielding is ongoing.

Discussion of Key Ground Force Family of Munitions

Army Tactical Missile System (ATACMS) Family of Munitions (FOM)

Description. The ATACMS FOM provides the Joint Force commander with a surface-to-surface, all-weather, responsive, deep-strike weapons capability for the attack of area and point targets from ranges of 25-300 km. ATACMS has been produced since 1990 in a logical series of improvements to range, accuracy and lethality. ATACMS Block I proved its effectiveness during Operation Desert Storm. A significant number of Blocks I, IA and QR Unitary were successfully employed in OIF in support of USAF, USMC, USSOCOM and USCENTCOM operations. Payloads

include anti-personnel, anti-materiel (APAM) bomblets and a 500-pound, high-explosive unitary warhead. ATACMS Unitary missiles provide near point-hit, low collateral damage, precision attack against targets in urban and complex terrain. The entire ATACMS FOM is launched from improved MLRS M270A1 and HIMARS rocket and missile battalions which are organic and assigned to modular fires brigades supporting joint early-entry forces, SOF and BCTs.

Program Status. The FY07-11 program funds procurement of ATACMS Unitary missiles and initiates a Service Life Extension Program (SLEP) for Block I and IA missiles that are approaching the end of their shelf life.

Chemical Energy Missiles—Javelin and TOW 2B

Description. The Javelin missile provides dismounted infantry with a medium-range, man-portable, simple-to-operate, shoulder-launched, fire-and-forget, economically maintained, rugged and reliable anti-armor weapon system that provides a highly formidable capability able to defeat all known armor threats for the dismounted close fight. As a fire-and-forget missile with top and direct attack modes and 2.5 times the range, Javelin is a leap-ahead improvement over the Dragon system. Javelin has two major components: a reusable command launch unit (CLU) and a missile sealed in a disposable launch tube assembly. Moreover, the Javelin's CLU incorporates an integrated day/night sight and greatly improves battlefield surveillance and survivability. Javelin has fire-and-forget technology that allows the gunner to lock on to the target, fire the missile, and immediately take cover. Other features include a tandem warhead, an imaging IR seeker and a soft launch that allows the missile to be fired from enclosures. In addition to its high lethality, Javelin is ideally suited to rapid deployment due to its size, high reliability and very small logistics tail. The Javelin has won high praise from commanders engaged in combat operations during OEF and OIF. Lessons learned from OEF/OIF operations are shaping the Javelin preplanned product improvement (P3I) program.

Program Status. Javelin FUE was Jun 96 with FRP beginning in May 97 and scheduled to continue through FY09. Javelin is currently being fielded to infantry, armor scouts and combat engineer units. The Block I program includes improvements in the CLU for better target detection, recognition and identification, and extended surveillance time; the missile includes improved performance at maximum range, reduced flight time and reduced acquisition time. The Feb 04 joint requirements validation of the Stryker ORD included a revision to integrate the Javelin into the Stryker Remote Weapons Station (RWS) on the ICV variant of the Stryker vehicles.

The Javelin weapon system is part of the FCS, dismounted with the ICV. The Javelin Block II missile is a complementary system to the FCS and will provide the Armed Robotic Vehicle-Light with a lethality overmatch.

Description. The TOW weapon system is a crew-portable, vehicle-mounted, heavy anti-armor weapon system designed to defeat armored vehicles and other targets such as field fortifications. The TOW weapon system provides the heavy anti-armor/assault capability for the Army's infantry forces (airborne, air assault, light, SBCT and Bradley-equipped mechanized) and the USMC forces with the TOW-equipped HMMWV, Light Armored Vehicle (LAV) and Cobra helicopters. The TOW family of missiles provides a man-in-the-loop, precision-point targeting capability, which serves to minimize collateral damage—a preeminent consideration in current and emerging operating environments. During OIF, the TOW missile fired from the Improved Target Acquisition System (with second-generation FLIR, won accolades from the 101st Airborne Division (Air Assault) for the decisive role these systems played in enabling the division to employ precision fires to destroy enemy forces while also avoiding collateral damage. The modernized TOW 2B (Aero) missile provides even greater range and countermeasure defeat to TOW-equipped units and will mitigate TOW inventory risk. The TOW Bunker Buster (TOW BB) missile was fielded to the first SBCT in Nov 03 as an in-lieu-of mitigation item for the Stryker ATGM until the Stryker MGS is fielded.

Program Status. The Army program plan maintains a minimum production line sustainment rate.

Improved Target Acquisition System (ITAS)

Description. ITAS provides long-range, lethal, heavy close combat and precision assault fires capabilities for light infantry forces and SBCTs. It doubles the target acquisition ranges over first generation systems and enables maximum range engagements with TOW missiles, significantly enhancing system lethality and Soldier survivability. Superior surveillance capability enables the Soldier to shape the battlefield by detecting targets at long range and either engaging with TOW missiles or directing the employment of other weapon systems to destroy those targets. A 90+ percent common derivative of ITAS is used in the ATGM variant of the Interim Armored Vehicle, part of the SBCT.

Program Status. ITAS is in FRP and is being fielded to AC and RC light infantry.

Guided MLRS (GMLRS) Rocket

Description. The GMLRS is the Army's primary precision strike, artillery rocket system. They replace the aging M26 unguided tactical rocket inventory, more than double the range out to more than 60 km and increase accuracy to near point-hit (less than 8 m GPS-aided) thus greatly reducing collateral damage and logistical resupply burden associated with unguided area munitions. GMLRS is launched

from HIMARS and M270A1 battalions that are organic and assigned to modular fires brigades and which provide integral fire support to joint early entry forces, SOF, and BCTs. GMLRS rockets fill the gap in range between direct-fire systems, short-range artillery systems, and longer range missile and air systems. GMLRS is a major upgrade to the M26 series rocket that integrates a guidance and control package and a new rocket motor.

The M30 Dual Purpose Improved Conventional Munition (DPICM) version of the GMLRS contains 404 submunitions (M101 grenades) to attack area targets. Fuze improvements, combined with the improved accuracy will also greatly reduce the hazard to operational maneuver and collateral damage from unexploded ordnance. A self-destruct fuze for the DPICM grenades is also being developed with European partners and will be incorporated into production. The XM31 GMLRS Unitary rocket variant will replace the DPICM submunitions payload with an approximate 200-pound, high-explosive (HE) unitary warhead, a multimode (point detonating, delay and proximity) fuze capability; and insensitive munitions (IM) rocket motor. This further reduces the collateral damage which enables the effects to be within danger-close proximity to friendly forces (within 200 m), as well as engaging targets in urban and complex environments with near point-hit accuracy (less than 8 m GPS-aided).

Typical threats to be engaged include self-propelled and towed artillery; multiple rocket launchers; forward-positioned, surface-to-surface missiles or enemy air defense; a wide variety of active and passive, soft or lightly armored vehicles; and area or point targets with no collateral damage constraints. The GMLRS Unitary rocket will provide the ability to attack critical area and point targets in restricted terrain (under foliage, urban environments, and heavy snow) that may require reduced collateral damage effects.

Program Status. GMLRS DPICM development is an international program with the United Kingdom, Germany, France and Italy. GMLRS DPICM began LRIP in FY03 and will achieve IOC in 2QFY06. GMLRS Unitary is currently a U.S.-only effort in SDD. An accelerated version of GMLRS-Unitary, with point detonate/delay fuze modes and the baseline, non-IM rocket motor, was fielded to the Multinational Corps-Iraq (MNC-I) and achieved IOC in Jul 05 within six months after Army G-3 validated the MNC-I Urgent Needs Statement (UNS). Hard targets were successfully engaged in Sep 05. The full GMLRS-Unitary capability with tri-mode fuze, trajectory shaping and IM compliant rocket motor will begin LRIP in FY07. Operational testing will be conducted in FY08 with IOC in late FY08.

120-mm XM395 Precision Guided Mortar Munition (PGMM)

Description. PGMM is a 120-mm, laser-guided, precision mortar munition designed to defeat high-payoff targets with low collateral damage. It is the maneuver task force commander's "hip pocket" indirect-fire, precision-effect munition, capable of providing responsive, standoff defeat of high-value targets. Current military operations have underscored the immediate and significant need for an organic, responsive, indirect-fire, extended-range, precision-strike munition that has significant capability against a variety of protected targets. PGMM is a multipurpose munition designed to defeat threat infantry protected by field fortifications, masonry walls, or lightly armored vehicles.

120-mm mortars, utilizing PGMM, are key organic lethality platforms for current and future combat forces. PGMM is the key lethality system for the close fight.

Program Status. PGMM transitioned into the SDD phase in 1QFY04, with production scheduled to begin in FY08 and fielding in FY10.

Excalibur

Description. Excalibur is a cannon-delivered, precision-guided, extended-range family of 155-mm artillery projectiles that self-guide to a programmed aim point using GPS. Excalibur will deliver better than 10-meter circular error probable accuracy from minimum (8 km) to maximum (35-40 km) range in all weather conditions. Anti-jam technology and an inertial navigation system are used to provide precision-strike capability in a GPS- jamming environment. Target and fuze data are programmed into the projectile via an inductive projectile programmer Enhanced Portable Inductive Artillery Fuze Setter (EPIAFS). Excalibur uses an optimized (near-vertical) terminal trajectory to engage targets in urban and complex terrain with minimal collateral damage. Excalibur will overcome the limitations of current area engagement munitions with precision, increased range, lethality and minimal collateral damage.

Program Status. Excalibur provides improved fire support through a precision-guided, extended range, collateral damage-reducing, more lethal family of artillery projectiles. The Excalibur guided projectile program is using an incremental development approach to provide a combat capability to the Soldier as quickly as possible and to deliver advanced capabilities and lower costs as technology continues to mature. The initial block will contain a unitary high-explosive warhead effective against point targets as well as personnel targets such as dismounted infantry, weapon crews, and light materiel targets including air defense rockets, radars and wheeled vehicles. Future block improvements will include smart and discriminating munitions.

Precision Guidance Kit (PGK)

Description. PGK, formerly known as Course Correcting Fuze (CCF), is a program that will enhance the accuracy at mid to max ranges of all 155-mm and 105-mm artillery projectiles. The PGK program is using an incremental development approach. The requirement for the first increment is for less than 50 m circular error probable (CEP) for 155-mm, high-explosive projectiles; the requirement for the second increment is for less than 30 m CEP for 155-mm cargo and high explosive projectiles; and the requirement for the third increment is for less than 30 meters (threshold) and 10 meters (objective) CEP for all 155-mm and 105-mm projectiles. The Navy's Guidance Integrated Fuze (GIF) program is a PGK candidate and represents a cooperative Navy and Army effort to demonstrate, further develop and produce a fuze that will enhance the accuracy of the current artillery ammunition stockpile. GIF will use GPS guidance and small canards to apply minor corrections to the ballistic trajectory of artillery projectiles. The fuze will apply in-flight corrections to deliver the round to the target with much greater accuracy. In addition to the Army and Navy cooperative GIF program, the Army plans to make multiple (if required) six-month technology demonstration awards in a parallel effort. The Army strategy is to evaluate the PGK and GIF efforts and select the best candidate to enter SDD in FY07.

The Army anticipates beginning increment one production in FY08. The PGK program provides the commander a capability for increasing the accuracy of current conventional, area-based cannon artillery rounds at a lower cost than other precision munitions.

Program Status. The PGK program begins technical development in 2006.

Mid-Range Munition (MRM)

Description. MRM is an autonomous and laser-guided smart munition fired from an FCS Mounted Combat System (MCS) vehicle. This munition extends the maneuver commander's battlespace beyond-line-of-sight (BLOS) to more than 12 km. MRM exploits the ability of the FCS-equipped BCT to identify targets at greatly extended ranges, as well as pass digitized targeting information, in real time, to the maneuver commander or shooter. It also exploits autonomous and smart munitions technologies to provide a munition capable of being fired from a platform at extended range BLOS targets. There are currently two MRM round concepts being pursued, MRM-KE and MRM-CE.

MRM-KE is an advanced guided, boosted, kinetic energy (KE) anti-armor smart munition capable of defeating current and advanced armored threat vehicles from close in to extended BLOS ranges. It utilizes a kinetic energy rod and rocket motor technology to thrust the round towards the target at a very high speed for defeat. A millimeter-wave (MMW) autonomous seeker or SAL, along with radial maneuver thrusters, is used to acquire and guide the round towards the target with high accuracy. The projectile uses fins to aerodynamically induce spin and accelerometers to provide body motion data to ensure proper dynamics for seeker search area processing.

MRM-CE is an advanced, guided, chemical energy (CE) anti-armor smart munition capable of defeating current and advanced armored threat vehicles from fairly close in to extended BLOS ranges. It utilizes a dual tandem, chemical energy, shaped-charge warhead at relatively slow round impact speeds for target defeat. A dual-mode MMW, imaging infrared (IIR) autonomous seeker or SAL is used to acquire and guide towards the target with high accuracy. The sensors are mounted on a unique ball-joint gimbal to accomplish sensor imaging and large sensor search areas for target acquisition. The projectile uses canards and fins to stabilize the round and IMU technology to allow it to glide accurately towards the target during seeker search and terminal impact.

Program Status. MRM is currently an S&T (Tech Base) program. It is expected to obtain funding in the FY08-13 program plan and to enter SDD in FY08.

M117 Armored Security Vehicle (ASV)

Description. The ASV is a lightly armored all-wheel drive vehicle with 360-degree armor protection. The ASV has a crew of three plus one passenger, and vehicle intercom system

with CVC helmets. The armament suite consists of a MK19 GMG and a M2MG. It has a full collective NBC protection systems as well as a digitization package which includes FBCB2 (BFT) and SINCGARS radio.

The ASV provides minimum essential protection to combat support units in highly exposed threat environments. The primary vehicle requirement is for ballistic protection (wraparound and overhead) greater than the up-armored HMMWV. Increased lethality is provided through the availability of both point/area weapons (M45/MK19) in the same turret. The ability to reload under armor adds to the survivability of the crew. The ASV survivability and lethality increase the military police capability to conduct stability operations to include convoy escort; area and route reconnaissance and surveillance; counter-incursion reaction force roles; and security of critical assets, key personnel and lines of communication.

Program Status. Currently, 1,118 ASVs are funded and 169 ASVs have been fielded to the area of responsibility (AOR) and will continue until theater requirement of 872 ASVs is met in May 07.

Force Application Capabilities Summary

Stryker, FCS, HIMARS and the other materiel programs described in this appendix readily demonstrate the Army's modernization efforts to develop network-centric forces enabled by superior situational understanding and decision-making speed, capable of dominant maneuver and precision engagement (force application) as part of the joint team.

As the Army transforms to the future combat force design and capability, it will explore new and promising technologies that will provide enhanced force application capabilities. Inherent in this design is the requirement for all means of precision engagement to operate within a joint and combined system of systems and to be strategically responsive so that it remains an effective partner in the joint fight. This means that the Army must maximize commonality of organizations and equipment as well as fully leverage information technologies. Army transformation will meet these key requirements.

Appendix 2: Protection

Protection is the sum of all actions taken to prevent an adversary's effect on the Joint Force and the population that the Joint Force protects. These actions include protection of personnel, infrastructure and critical computer networks. Because WMDs pose a unique and catastrophic threat to personnel and infrastructure, special measures must be taken to deter and mitigate the effectiveness of an adversary's use of WMDs. These measures include WMD counterproliferation, nonproliferation before an attack, active defense measures during an attack, and our ability to conduct effective consequence management following an attack using WMDs.

Protection is accomplished through the planned and integrated application of several security-related and supporting operations and programs including law enforcement, physical security, protective services operations, critical infrastructure protection, information operations, crisis response, consequence management, intelligence and counterintelligence, intelligence fusion, counterterrorism and antiterrorism, and through air and missile defense (AMD) and chemical, biological, radiological, nuclear and high-yield explosive (CBRNE) defense measures.

The Army provides full-dimensional protection against enemy effects at the strategic,

operational and tactical levels to our homeland, allies and coalition partners, and the Joint Force. The protection of national or host nation assets and national centers of gravity is vital to the strategic level of operations from which national or combat power is generated.

The Army's priority of efforts in force protection remain focused on supporting operational forces and equipment deployed and in-transit; capitalizing on threat reporting and coordination with international/national intelligence and law enforcement agencies; enhancing detection and deterrence capabilities for CBRNE threats; institutionalizing installation access control for personnel and vehicles; improving policy and doctrine; strengthening training and exercises; and expanding force protection assessments.

The Army continues to ensure all mission essential systems are hardened to survive NBC effects, function in NBC environments, and are decontaminable. This will ensure that current and future combat forces are prepared to operate in NBC environments.

Physical security programs continue to focus on ensuring the adequacy of policy and programs, physical security technology initiatives, access control, and civilian police and guard initiatives necessary to ensure the security of individuals and property in support of worldwide Army operations. The Army is continuing to assess its critical infrastructure to ensure adequate protection against potential threat actions.

This appendix provides a brief discussion of Army protection capabilities, specifically, Army AMD and CBRNE defense capabilities and key materiel programs associated with these capabilities. The importance of space-based capabilities and their role in force protection is also described.

Air and Missile Defense (AMD) Capabilities

Army AMD Soldiers remain deployed worldwide in support of U.S. efforts in the global war on terrorism and defense of the homeland, while facilitating our transformation to a more expeditionary, joint, rapidly deployable and adaptive force. Patriot units are positioned in South Korea as a deterrence measure and sign of continuing U.S. commitment to that nation. AMD battalions man critical systems supporting operations in OIF and OEF. Air Defense and Airspace Management (ADAM) Cells are being fielded to and deployed with divisions and BCTs, including SBCTs. AMD units, weapon systems and integration platforms maintain constant defense of the National Capitol Region, are on call for special security events, and are viable enablers to the President and SECDEF's joint command and control network.

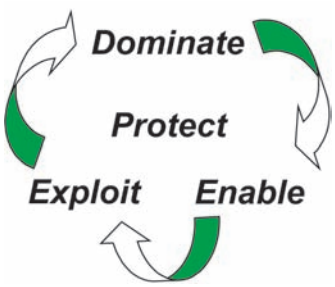
U.S. AMD transformation is fully aligned with ongoing and future DOD, Army and joint transformation policy. AMD units have been redesigned to meet the challenges of the future operational environment, the area-denial/anti-access strategies adversaries will employ, and the asymmetrical aerial capabilities adversaries will use against joint and coalition forces. AMD forces remain a ready and relevant member of the joint team at strategic, operational and tactical levels and possess the required capabilities to successfully execute all assigned warfighting missions. AMD is revising doctrine and training to fully support the Army's modular force conversion and provide the Combatant Commander with scalable, modular and tailorable force packages that possess joint and expeditionary capabilities. AMD is modernizing it's

capabilities along a joint AMD SoS approach that will also contribute to the attainment of Defense Transformation Planning Guidance operational goals. AMD transformation is consistent with and draws from Joint Operating Concepts, Joint Functional Concepts, and Joint Integrating Concepts. En route to the desired end state, Army AMD will continue to enhance the warfighting capabilities of the current force by pulling capabilities forward from the future force as technology and resources will allow.

AMD's Role in the Army

AMD forces—fighting interdependently with other elements of the JIM team at strategic, operational and tactical levels—will provide AMD and contribute to situational awareness/understanding, airspace management, and operational force protection to deter or defeat enemy aerial threats, protect the force and high-value assets, enable freedom to operate, and contribute to victory.

To accomplish this mission, transformed AMD forces must be able to dominate, enable, control and exploit the third dimension of the AOR.



Dominate. Army AMD will help dominate the third dimension interdependently with JIM forces, at strategic, operational and tactical levels, through joint attack operations; joint, layered active defense operations; joint passive defense measures; and integrated battle command. Modular, scalable, multifunctional Army AMD formations will be employed when and where required to deter and dissuade adversaries from using air and missile threats. Army AMD will help integrate and execute JIM offensive and defensive operations to deny enemy launch points and kill enemy air and missile threats on the ground before they can be launched. Mission-tailored AMD will also destroy enemy aerial RSTA beyond standoff, contributing to friendly force ability to see first by forcing the enemy to see last (or not at all). To preclude warheads or target debris from harming friendly forces or assets, Army AMD will proactively kill targets during midcourse and terminal phases of flight at sufficiently long ranges.

Enable. Army AMD will help enable the third dimension and contribute to information superiority by integrating its sensor and battle command elements into the joint distributed network and providing continuous surveillance information that will support the Single Integrated Air Picture (SIAP) portion of a three-dimensional COP. These AMD sensors and battle command elements will provide joint third-dimension situational awareness and understanding; provide Army linkage to the joint identification/engagement authorities; facilitate planning, coordination and synchronization of airspace activities and linkage to the Joint Airspace Control Authority (ACA); help enable trajectory clearance for ground-to-ground, ground-to-air and air-to-ground fires; and protect friendly aerial objects.

Control. Control is exercising, regulating, and governing the Army use of airspace in close coordination with the joint airspace control authority. Control assures discrimination of all airspace objects, virtually eliminating the risk of fratricide; enhances force protection for air and ground forces; and increases the overall effectiveness of the force.

Exploit. By dominating and enabling in the airspace, joint and coalition forces can better exploit it for their exclusive operational benefit. AMD and joint forces will exploit the third

dimension by using it to conduct inter- and intra-theater operational maneuver from strategic distances and to sustain noncontiguous forces via air. Modular, multifunctional AMD task forces will be deployable on C-130/future force airlift and will help enable the force to project and sustain in an anti-access environment by protecting critical bases of operation and protecting joint vertical entry forces. Army AMD ground and elevated sensors will provide extended range surveillance of aerial and ground targets that can be exploited to support offensive and defensive NLOS engagements. Army AMD elevated sensors will be multifunctional platforms providing long-endurance communications relays to distribute actionable information to enable commanders to effectively integrate, coordinate and synchronize warfighting operations with dispersed forces on the nonlinear battlefield. Army AMD and joint forces will leverage space and aerial ISR capabilities to support joint attack operations and provide early warning of air and missile attack to at-risk forces and civilian populations.

Modernizing our AMD System of Systems (SoS) in the Context of Transformation

A relevant and ready AMD SoS capability is crucial to supporting our National Security Strategy. As AMD units use specific systems to dominate, enable, control or exploit they do so with varied strengths and weaknesses. Transforming AMD as an SoS facilitates the Joint Force commander's ability to employ capabilities in mutually beneficial ways that capitalize on strengths and offset weaknesses to optimize AMD affects. The necessity of an AMD SoS is further underpinned by complex global considerations, which influence operational focus against threats that can rapidly deliver WMDs against the homeland and from outside a Joint Force commander's AOR. Army AMD SoS will require an unprecedented degree of offensive/defensive operations and capability integration within and among Joint Force commands. This integration will enable Active AMD to provide a layered defense with multiple engagement opportunities against threats.

The regional fight may be constrained by limited assets due to strategic imperatives, short warning times for deployment, limited lift and immature AORs. The Joint Force will mitigate these challenges through offensive/defensive JIM integration with AMD integration platforms.

Joint, integrated AMD is a critical warfighting requirement that protects our homeland, deployed forces, friends and allies. This capability is achieved through an effective SoS application and synergy consisting of sensors, shooters and battle managers. Integrated battle command provides the AMD SoS backbone. Without the ability to provide fused, near real-time information with fire control quality data, Army AMD SoS will not be able to provide such key AMD capabilities as BLOS or wide-area engagements. There are no battle command systems that can provide fire control quality data throughout the SoS. Development of a SIAP or integrated fire control capability evolution may eventually provide a single battle command solution among the Services and the Joint Force, but that capability has not yet been developed, planned or programmed.

The Army AMD SoS is designed to offset the problems related to Service-specific systems—limited interoperability or joint functionality, limited capability to maximize engagements out to kinematic ranges, lack of a fused air picture, no persistent wide-area detection capability and limited engagement

battlespace due to the range and terrain limitations of single systems.

The Army AMD SoS program is synchronized with other Services and in many aspects is leading the way to develop a Joint Force AMD SoS to counter ballistic missiles, cruise missiles (CMs), UAVs, tactical air-to-surface missiles, rockets, artillery and mortars, and rotary/fixed-wing aircraft threats.

As the Army AMD SoS matures, the traditional system-centric paradigm that has driven AMD DOTMLPF is experiencing a corresponding evolution. The AMD force will continue to possess specific systems (e.g., Patriot), which comprise shooters, sensors, and battle managers. However, our pursuit of SoS has given rise to a conceptual construct of shooters, sensors, and battle managers that will profoundly affect how Army DOTMLPF supports AMD. In this context, specific systems become more transparent and less stovepiped. A mature AMD SoS will ultimately possess a common battle manager that will be supported by plug-and-fight shooters and sensors. Our AMD units will be supported by Soldiers who will be proficient in operating and maintaining a common battle manager, and a suite of shooters and sensors.

Already, Army AMD is changing the way it organizes and fights with the development of composite AMD units that are modular, multifunctional and more readily provide the full spectrum of AMD combat potential. These units more efficiently offset the limitations of a single system, significantly increase the effectiveness of the area air defense commander's defense design, enhance modular or task force operations, reduce the limitations created by autonomous operations and conditions that have led to past fratricide, and increase the engagement battlespace against all AMD threats.

The AMD organizational vision is fully embedded with the modular Army future force vision. All forces are considered pooled and available to support any future JIM headquarters with mission-tailored packages. Army AMD transformation will optimize the synergy between AC and RC forces to meet the requirements inherent in homeland security, strategic deterrence, stability operations and major combat operations Joint Operating Concepts.

Unit transformation begins with battalions but stretches across all AMD echelons. Five composite AMD battalions will each comprise four Patriot batteries and one Avenger battery by 3QFY06. In the future, our composite AMD units will evolve into a combination that includes Surface-Launched Advanced and Medium Range Air-to-Air Missile (SLAM-RAAM) and, in some cases, the Terminal High Altitude Area Defense (THAAD) units. AMD batteries or battery teams will be the primary battle elements to achieve effects on the battlefield from tactical to strategic levels. They can rapidly deploy, achieve one or more required lethal effects without augmentation, and sustain unit operations. They can fight independently but generally will serve as subordinate, multifunctional AMD task force elements. All AMD combat units will be pooled at the corps-level under AMD brigades for rapid integration into corps or division formations, in support of BCTs, as the operational/threat environment requires.

Army Air and Missile Defense Command (AAMDC) is the senior Army AMD battle command headquarters at the corps level, and commands AMD forces (brigades) assigned to operate at that level. AAMDC has, in concert with the Joint Force's area air defense commander, overall mission responsibility for the planning, integration and execution of Army air and missile defense operations. AAMDCs are regionally focused headquarters. The two

AC AAMDCs conduct frequent, short-notice deployments in support of U. S. Pacific Command (USPACOM) and USCENTCOM. The RC AAMDC is focused on defense of CONUS in support of U.S. Northern Command (USNORTHCOM) and complements the regionally focused headquarters in the other geographic Combatant Commanders' AORs. THAAD and JLENS systems, along with their supporting command and maintenance units, will be assigned to regionally focused AMD brigades.

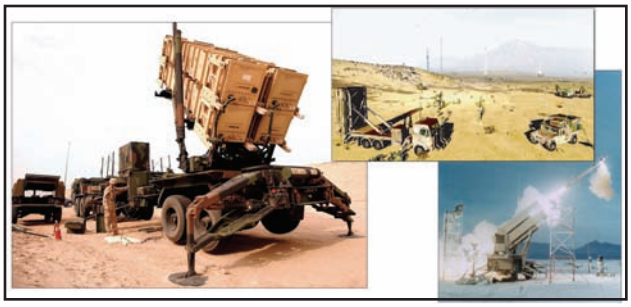
Army AMD transformation, comprising SoS modernization efforts, supports joint interdependence by providing the Joint Force its only current capability against short-range ballistic missiles—the first integrated capability against advanced CMs—and by reducing focus on areas well covered by the Joint Force, such as defeating the fixed-wing threat. Army AMD continues to be an essential element of Joint Force operations and provides the right capabilities for joint and Army future force success.

Discussion of Key AMD Materiel Programs

Army modernization for AMD provides key components and capabilities of the joint AMD SoS. As aerial threats possess diverse profiles and varied target characteristics, Army modernization will provide systems capable of defeating a wide range of aerial threats from advanced CMs to tactical ballistic missiles.

Patriot/Medium Extended Air Defense System (MEADS) Combined Aggregate Program (CAP)

Description. Within the current force, Patriot is an echelon above corps (EAC) AMD system that can simultaneously engage and destroy multiple air and missile threats at varying



ranges and altitudes. It is the world's only battle-proven theater AMD system and will be a key AMD element for the next 20 years. During this period, Patriot will provide Combatant Commanders with modular, scalable, mission-tailored capabilities to dominate, enable and exploit the third-dimension battlespace and contribute to operational force protection in support of the joint team.

With the approval of the Defense Acquisition Executive (DAE), the Army has combined the management, development and fielding of the Patriot and MEADS programs. The Patriot/MEADS CAP is an integral element in the DOD Ballistic Missile Defense System (BMDS) and is based on the concept that the MEADS objective capability will be achieved through an evolutionary approach by incrementally inserting MEADS major end items (MEIs) into the current Patriot system, thereby providing increased capability to the field in a more timely manner. This approach allows for earlier modernization and fielding of enhanced capabilities to current Patriot forces in conjunction with recapitalization efforts.

In FY06, the Patriot force will complete reorganization in accordance with the Army G-3/5/7-approved January 2005 Force Design Update (FDU), which implements a force structure of 13 Patriot-based battalions consisting of four battery battalions. Of these thirteen battalions, five will be composite AMD battalions (PAC-3 and Avenger), and eight will be pure Patriot battalions (five PAC-3 battalions and three PAC-2 battalions). While the

ARNG will no longer possess Patriot force structure, the Compo I Patriot force will grow from 50 to 52 batteries/fire units in FY06. Currently, only 40 of the 52 AC Patriot batteries are funded for upgrades to PAC-3, allowing for a mixed force of battalions with significantly different capabilities. PAC-3 provides a remote-launch capability, which significantly extends the defended area; increases range, altitude and firepower with the PAC-3, hit-to-kill, missile and ground support equipment; and engages multiple TBM, CM and UAV threats. PAC-3 system upgrades are planned to counter evolving threats, improve joint interoperability, and increase surveillance and detection capabilities required as part of an evolutionary development. Further, to support current operations, congressional committees have resourced nine capability upgrades that will be fielded to Patriot units in FY05-07 to remedy deficiencies identified in OIF lessons learned. These remedies include upgraded air-to-ground communications, improved software affecting classification, identification friend or foe (IFF) enhancements, Link-16 joint range extension, embedded data recorder replacement, radar shroud monitor, battery command post (BCP) acceleration, upgrades to AMD training centers, and software-driven improvements in training scenarios to address spurious tracks and track correlation.

The Patriot recapitalization program improves operational capability by bringing existing Patriot assets to a like-new (zero-miles/zero-hours) state, thereby achieving OSD's Setting the Force objectives and enabling the Army to meet future Combatant Commander requirements. However, beginning in FY07, the Patriot recapitalization program will be significantly reduced from a recapitalization of 85 MEIs per year to four MEIs per year. In the context of the Army's transformation to the future combat force, this divestment strategy accentuates the importance of the well-timed fielding of future force capabilities, such as MEADs.

MEADS will provide joint and coalition forces critical asset and defended area protection against multiple and simultaneous attacks by short- to medium-range ballistic missiles, CMs, UAVs and tactical air-to-surface missiles (TASMs). MEADS will have a netted and distributed architecture with modular components to increase survivability and flexibility of employment in a number of operational configurations. The objective MEADS fire unit/battery will be scalable and tailorable to operational requirements. MEADS implements the plug-and-fight capability to support flexible interoperability in support of AMD task force requirements. It comprises a battle manager capable of integrating into Army and Joint SoS battle command architectures using Link-16 and wideband networking capabilities to provide maximum protection of supported forces by engaging at longer ranges with distributed system operations and BLOS engagements. The MEADS fire unit/battery features a near-vertical launcher capable of launching up to 12 missiles; a missile reloader; the PAC-3 Cost Reduction Initiative (CRI) missile; an ultra-high frequency (UHF) surveillance radar (SR), providing 360-degree coverage and near-range to long-range detection of multiple low-radar, cross-section targets; and two X-band Multifunction Fire Control Radars (MFCR) that provide 360-degree coverage and are designed for high-precision handover to the in-flight missile, discrimination capabilities, and short-range target detection and horizon search.

In addition, MEADS will provide significant improvements in strategic deployability, transportability, mobility and maneuverability. Its substantially reduced lift requirements enable MEADS to be deployed rapidly with essential combat loads via inter-/intra-theater land, sea

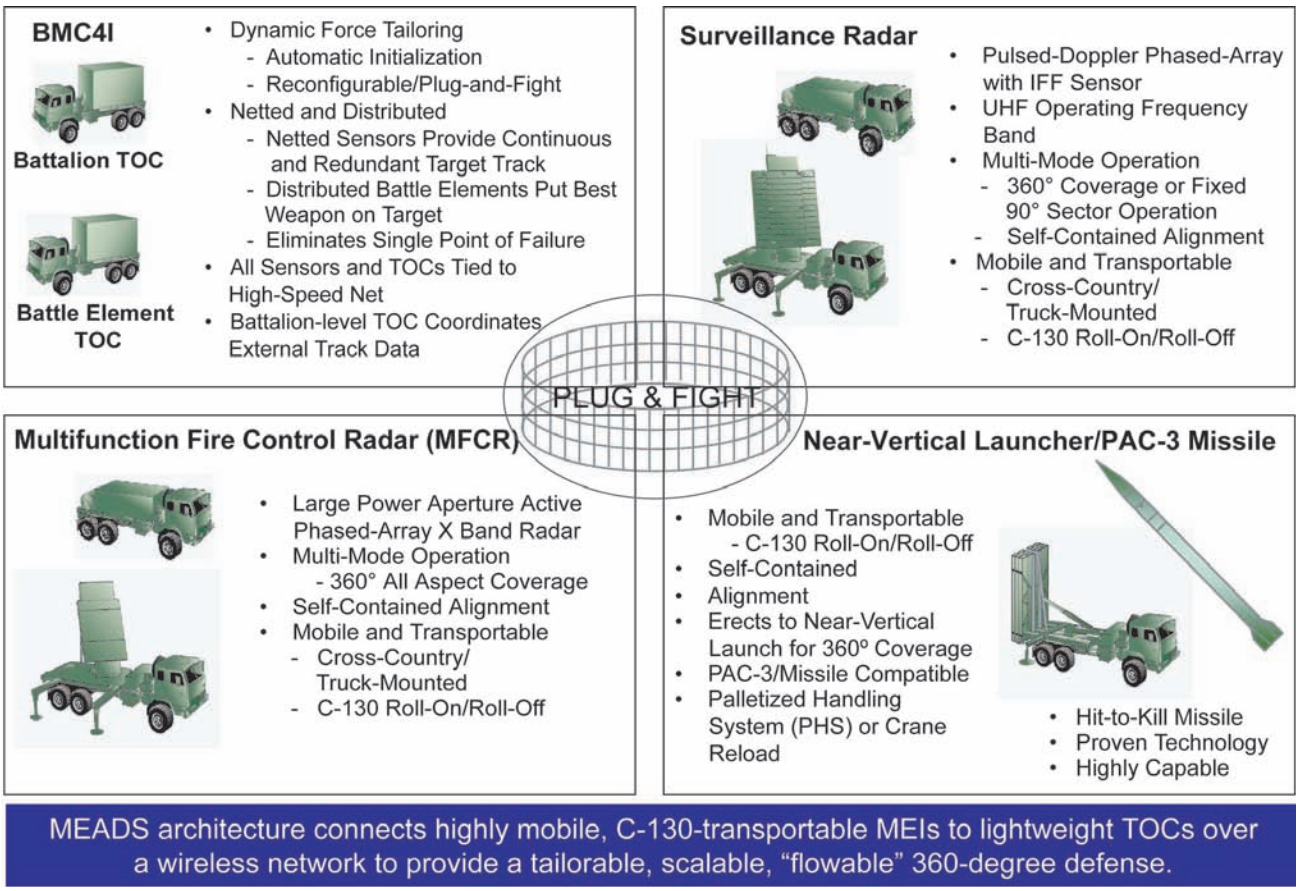


Figure D-7. MEADS Key System Elements

and airlift anywhere in the world. MEADS will provide Combatant Commanders with an AMD system that is fully transportable by C-130 aircraft, thus increasing strategic and tactical mobility. Further, its decreased size and weight and ability to conduct rapid march order and system emplacement will enhance maneuverability, thereby providing better AMD protection to maneuvering forces.

While the PAC-3 CRI missile is the baseline missile for MEADS, the Missile Segment Enhancement (MSE) missile is being developed to meet U.S. operational requirements. MSE will provide a more agile and lethal interceptor that increases the engagement envelope/ defended area of the Patriot system and MEADS. The MSE improves upon the current PAC-3 missile capability with a higher performance solid rocket motor, modified lethality enhancer, more responsive control surfaces, upgraded guidance software, and insensitive munitions improvements. At the completion of the development effort, the change to the missile will be incorporated into production currently planned for FY10. MSE will significantly contribute to increasing MEADS capability to "defend" as part of the Protection Joint Functional Concept construct.

The CAP increments will improve the current Patriot capability to protect forces during the transformation to MEADS. MEADS MEIs will be developed and fielded in three acquisition increments that comply with, and are in support of, integrated AMD and Joint SoS capabilities:

CAP Acquisition Increment 1 (FY09). The first CAP increment will rehost the current

battle command capability resident on the Patriot system on new prime movers to gain C-130 transportability and add a capability enhancement that enables BLOS engagements for SLAMRAAM using Patriot or JLENS (elevated sensor) fire control data. The CAP Increment 1 BMC4I begins initial production in FY08 and serves as the basis for further incremental development.

CAP Acquisition Increment 2 (FY11). The Increment 2 architecture will integrate the MEADS launcher and initial battle command capability into Patriot. It includes the MSE missile in a single-canister configuration, the MEADS near-vertical launcher with the Patriot reloader and MEADS plug-and-fight and battle command software packages to support integrated fire control. These components, when integrated into the SoS architecture with JLENS, will significantly increase the defended area by enabling engage-on-remote (EOR) capability against incoming threats. EOR capability will enable units to take advantage of the significant improvements of the MSE missile, providing increased protection to tactical formations and defended assets. The CAP Increment 2 capability begins initial production in FY11 as Patriot transforms to MEADS.

CAP Acquisition Increment 3 (FY15). The CAP Increment 3 architecture will integrate the objective MEADS configuration into the AMD task force. Updated battle management capabilities will include a communications backbone and software functionality that fully implements AMD task force plug-and-fight capability to enable rapid transition of elements within the force to support tactical mobility requirements. The CAP Increment 3 integrates the new SR and two MFCRs into the fire unit/battery for full 360-degree coverage while maneuvering with the protected force. The associated MEADS surveillance, fire control, classification discrimination and identification (CDI) and battle management functionality will offset current operational Patriot shortfalls/capability gaps in the areas of sectored systems, stressing threats, strategic and tactical mobility and CID. Enhancements in CID will significantly contribute to fratricide prevention by incorporating the capability to noncooperatively classify targets by type and specific platform, thereby contributing to the identification of unknown targets that may have nonfunctional IFF transponders.

Program Status. Within the CAP, there are two synergistic efforts: an international MEADS development effort (United States, Germany and Italy) managed by the North Atlantic Treaty Organization (NATO) MEADS Management Agency (NAMEADSMA), and a U.S. effort to inject U.S.-specific capability requirements into the MEADS MEIs. The Army's plan for the combined management, development and fielding of the Patriot and MEADS programs was approved by the DAE at the Defense Acquisition Board (DAB) on 7 Apr 03. On 1 Jul 04, the DAB-approved Milestone B for all three CAP increments, with a FUE date in 2015 (battery-level). NAMEADSMA, the NATO contracting authority, awarded a $3.4 billion design and development contract to MEADS International on 31 May 05.

Terminal High Altitude Area Defense (THAAD)

Description. THAAD is a ground-based missile defense system being developed

to protect forward-deployed military forces, population centers and civilian assets from short-, medium-, and intermediate-range ballistic missiles. As an element of the Missile Defense Agency's (MDA) terminal defense segment, THAAD will provide the opportunity to engage ballistic missiles—outside or inside the earth's atmosphere—that were not destroyed earlier in the boost phase or midcourse phases of flight by other BMDS elements, such as Aegis or the Ground-Based Midcourse Defense System Interceptor.

A THAAD unit consists of a command and control/battle management component, truck-mounted launchers, interceptors, an X-band radar and ground support equipment. The THAAD interceptor is comprised of a single-stage booster and a kinetic kill vehicle, which destroys enemy warheads through hit-to-kill collisions. The THAAD radar is a solid-state, phased-array, X-band radar that performs search, track, discrimination and other fire control functions. The THAAD radar also sends updated target information to the kill vehicle while in flight.

Program Status. MDA is developing THAAD in incremental, capabilities-based blocks. Flight tests scheduled to begin in FY06 are part of an extensive T&E program that will demonstrate the capability of the ongoing research and development activities. The THAAD acquisition strategy will rely on test program results to make future acquisition and Army transition decisions. The first THAAD fire unit will begin fielding in FY09 with a second in FY10.

Surface-Launched Advanced Medium-Range Air-to-Air Missile (SLAMRAAM)

Description. SLAMRAAM will defend designated critical assets and maneuver forces against aerial threats. It is a key component

of the AMD composite battalion, will replace the Avenger in the Army's AMD force and is being developed in concert with the USMC's Complementary Low-Altitude Weapons System (CLAWS). SLAMRAAM is a lightweight, day-or-night, adverse-weather, NLOS system for countering CMs, UAVs, RSTA platforms, and rotary and fixed-wing threats with engagement capabilities in excess of 18 km. The system has an Integrated Fire Control Shelter (IFCS) to command and control its sensor and launchers. While SLAMRAAM uses its own Sentinel Enhanced Target Range Acquisition Classification (ETRAC) to provide surveillance and fire control data, the system will receive data from other joint and Army external sensors when available. SLAMRAAM's launcher is a HMMWV-mounted platform with common joint launch rails, launcher electronics, onboard C4 components, and four AIM-120 Advanced Medium-Range Air-to-Air Missiles (AMRAAMs).

Program Status. The SLAMRAAM entered the SDD phase in Sep 03. It is funded for development and fielding of one battery in FY08 and one battalion in FY10.

Ground-Based Midcourse Defense (GMD)

Description. GMD is a fixed-site, land-based system designed to provide limited protection to the United States against an intercontinental ballistic missile (ICBM) attack. The GMD

design focuses on ensuring high defense effectiveness against ballistic missile attacks of limited scope (e.g., accidental, unauthorized, or authorized limited launch). The GMD SoS architecture comprises the following components: GMD Communications Network (GCN), GMD Fire Control (GFC), Missile In-Flight Communications, and Ground-Based Interceptors (GBI). GMD is part of a SoS architecture that includes Upgraded Early Warning Radars (UEWR), Forward-Based X-Band–Transportable (FBX-T) radars, Aegis Ballistic Missile Defense (BMD), Sea-Based X-Band (SBX) radar, the Space-Based Infrared System (SBIRS) and its Defense Support Program (DSP) predecessor.

GMD Initial Land-Based Capability

Program Status. GMD, as an element of the MDA's broader BMDS, is a capabilities-based developmental acquisition program utilizing a block approach. The Army has served as lead Service for GMD (less acquisition) since 1999, and today has focused its efforts on providing installation support, facilities, resources, force protection and operational personnel in support of the deployment of a capability for limited defensive operations in 2004 with an additional mission as a developmental test bed. The Strategic Planning Guidance directs the MDA to develop options for expanding GMD beyond the test bed.

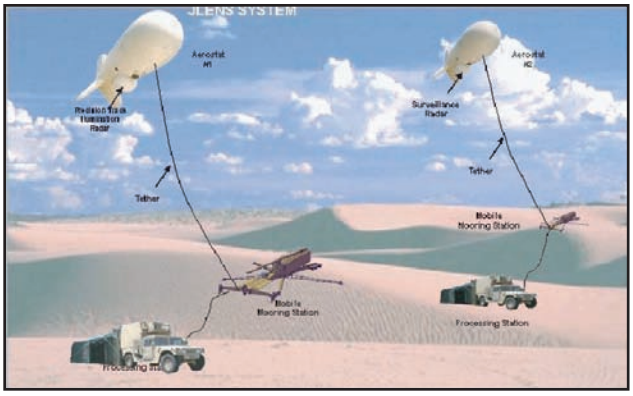
Counter-Rocket, Artillery and Mortar (C-RAM)

Program Description. C-RAM is a holistic, multi-Service approach for providing integrated, modular and scaleable capability to counter rocket, artillery and mortar attacks against friendly forces and assets while minimizing collateral damage or posing a threat to friendly/neutral aircraft. The C-RAM initiative is built upon seven functional areas: shape, sense, warn, intercept, respond, protect and C2 to provide the current force with near-term and midterm protection against rockets, artillery and mortars (RAM). Several agencies within the Army are an integral part of the Joint C-RAM solution including the TRADOC Futures Center, Air and Missile Defense Battle Lab (AMDBL), other TRADOC schools and the Maneuver Support Center, the Counterstrike Task Force at Fort Sill, the Engineer Research and Development Center, the Rapid Equipping Force, and various material developers.

Program Status. An operational need to protect friendly forces against indirect fire attacks in support of the global war on terrorism has served as a catalyst for heightened interest in C-RAM development. In May 04, TRADOC began an effort to spirally develop and deploy an integrated set of capabilities to defeat RAM threats. Subsequently, the Joint IED Defeat Task Force sponsored a Joint C-RAM initiative. A future Army program will be the result of this initiative. Already, the Army has deployed an initial sense, warn and intercept capability through a system of systems using Land-based Phalanx Weapon Systems (LPWS), Forward Area Air Defense-Command and Control (FAAD-C2), Lightweight Counter Mortar Radars (LCMR), Firefinder Radars, Sentinel Radars, Wireless Audio Visual Emergency System (WAVES), Rapid Aerostat Initial Deployment (RAID),

and Air and Missile Defense Workstations (AMDWS). The deployment of more robust shape, sense, warn, intercept and respond capabilities is planned for future spirals. Future spiral capabilities are improved kinetic energy and potentially directed energy solutions to support the intercept functional area; and integrated base defense security through integrated sensor suites, information sharing, and improved battle command to support the shape, response and C2 functional areas.

Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS)



Description. JLENS, an Army-led joint-interest program, is an elevated, long-endurance system that uses advanced sensor and networking technologies to provide 360-degree Wide-Area Surveillance Radar and Precision Track Illumination Radar (PTIR) against the land attack cruise missiles (LACMs) threat and can also serve as a long-endurance communications relay. JLENS enables joint and Army AMD SoS to conduct BLOS and NLOS engagements against aerial targets out to each respective interceptor's maximum effective kinematic range and to enable engagements in clutter. JLENS provides detection and tracking of fixed- and rotary-wing aircraft, UAVs, TBMs in boost phase, and surface moving objects when performing a selective moving target indicator (SMTI) mission. JLENS directly supports all facets of Joint Theater AMD (JTAMD) active air defense and contributes to offensive counter air (OCA)/attack operations and C4I through multi-link dynamic data distribution. JLENS supports JTAMD mission set execution by providing surveillance and supporting integrated fire control (IFC), and aerial CID activities. JLENS is a major contributor to the JTAMD Capstone Requirements Document (CRD) objectives of SIAP and CID, providing precision tracking and measurement information. As a key element of the SIAP, JLENS correlates organic tracks/measurements with IFF and precise participant location identification (PPLI) data. The correlated data is then placed on the external networks. JLENS is less expensive to buy and operate than fixed-wing aircraft and can stay aloft for up to 30 days, providing 24-hour battlespace coverage over extended areas.

Program Status. JLENS is a key component of the Army's cruise missile defense (CMD) acceleration initiative, developed as a joint solution in a SoS framework, to provide Combatant Commanders with an increased CMD contingency capability by FY08, with FUE in FY11. JLENS is being developed, demonstrated and procured using an evolutionary acquisition strategy consisting of spirals and increments that lead to the fulfillment of ORD requirements. Block 1 consists of two spirals, with spiral 2 meeting Block 1 requirements. Each spiral is being constructed to support air-directed, surface-to-air missile (ADSAM) engagements, SIAP and CID capabilities. Block 2 will provide increased fire control and wide area surveillance capability with each sensor hosted on a nontethered platform. Block 3 provides an increased system capability with sensors hosted on a single nontethered platform for high mobility. JLENS was approved for Milestone B in FY05 as an ACAT 1D program. It is scheduled for a Milestone C decision in FY10.

Rapid Aerostat Initial Deployment (RAID)

Description. RAID is a fielded force protection sensor on an elevated platform (aerostat or tower) that provides 24/7, 360-degree, high-resolution visual coverage for forward operating bases in a theater of operations. This electro-optical (EO) infrared (IR) sensor provides early-warning and targeting data to combat IEDs, mortar, rocket-propelled grenade and small-arms attacks. The sensor consists of a day/night sight, laser range finder and spotting scope capable of detection ranges of 13 km for personnel and 20 km for vehicles. In Dec 02, the VCSA tasked Army materiel developers, in coordination with the REF, to determine what materiel solutions could be made rapidly available to improve force protection for Soldiers in Afghanistan and elsewhere. In response to the VCSA initiative, the JLENS project office proposed, developed and deployed three force protection packages known as JLENS RAID to Afghanistan in support of OEF in Mar 03 for $6.1 million. These elevated, multispectral sensor systems were fully operational by early Apr 03.

The JLENS RAID system consists of three main components:

Platform. AB-1309, 117-foot tower or 15-m aerostat.

Sensor. Provides 24/7, 360-degree visual coverage with an EO color daytime camera, an infrared black/white day or night camera, and a laser range finder with pointing azimuth indicator for precisely locating targets of interest out to 13 km (personnel) or 20 km (vehicles), allowing the commander in the field to respond in a timely, safe and appropriate manner.

Ground Control Station. For sensor display and control with video recording/playback capability EO/IR fully passive sensor system, color EO daytime and black/white IR day or night capability with laser range finder, and pointing azimuth indicator.

Program Status. The Army, through the FY05 Supplemental, funded 39 systems for the operational theater. This will bring the total systems in theater to 59.

Sentinel

Description. The Sentinel radar employs a modern, phased-array antenna that automatically detects, tracks, classifies and identifies CMs, UAVs, helicopters and fixed-wing aircraft to cue maneuver AMD battalions (MAMD) weapon systems. The Sentinel is comprised of a radar-based sensor system with its HMMWV prime mover, power, IFF, and command and control interfaces. The

antenna/transceiver group has an advanced third-dimensional battlefield air defense radar housed aboard a light tactical trailer chassis. Targets can be hovering or fast moving, from nap of the earth to the maximum engagement altitude of MAMD weapon systems. The radar operates in the X-band, transmitting 1,100 pencil beams per rotation. It rotates at 30 rpm (two-second update). Sentinel, with the ETRAC, improves operations in a joint environment to detect smaller cross-section targets and is critical for airspace SA/SU, de-confliction and advanced threat early warning. ETRAC upgrades add 20 rpm (three-second update) rotation and staring capability to enhance the detection and tracking of CMs. The instrumented range and altitude are 40 km and 4 km, respectively. The Sentinel utilizes the SINCGARS, AN/VRC-92A, EPLRS and AN/VSQ-2 radios. These radios can provide a track file of more than 60 targets. Sensor data is passed through the FAAD-C2 system to MAMD weapon systems. Sentinels will be organic to the AMD composite and the Avenger/SLAMRAAM (pure) battalions, providing 360-degree surveillance to counter CMs, UAVs and other air-breathing threats (ABTs), enabling Avenger today and SLAMRAAM in the future to defeat those threats.

Program Status. The program completed its primary Sentinel procurement in FY01 and is currently undergoing P3I to improve surveillance and tracking capabilities. Sentinel completed fielding to AC and ARNG units in FY03. Additional upgrades and system modifications are currently scheduled through FY11 for many AC and RC units to improve target identification, increase joint combat ID capabilities, and reduce the potential for fratricide. ETRAC modifications will be applied to 74 radars by FY11. The ETRAC modifications consist of two upgrades: Phase 1A improves the radar detection range against low-observable and stealthy targets; Phase 1B improves the radar classification of low-observable and stealthy targets at extended ranges. The Phase 1B capability for target airframe classification will support the joint identification and target classification function that allows short-range weapons to operate at maximum effectiveness.

Air and Missile Defense Planning and Control System (AMDPCS)

Description. The AMDPCS integrates AMD operations for ADA brigades, the Army Air and Missile Defense Command (AAMDC) headquarters, joint command and control elements, and ADAM Cells. AMDPCS enables air defense/engagement operations through two major systems: the AMDWS is a missile defense staff planning and battlespace situational awareness tool that provides commanders at all echelons with a common tactical and operational air picture and enables Army interoperability with joint theater AMD forces; the Air Defense System Integrator (ADSI) facilitates situational awareness and understanding for air battle engagement operations. AMDPCS automates C4ISR digital linkages; integrates AMD sensors, weapons and C3I systems; and interfaces with the Army Battle Command System (ABCS), Global Command and Control System (GCCS), and joint and allied battle management systems. AMDPCS is the foundation for the ADAM Cell and a critical component of the maneuver commander's ability to execute effective Army airspace command and control (A2C2).

Program Status. AMDPCS is an ACAT III program with a May 97-approved ORD currently under revision. The FY06-11 program plan funds AMDPCS to complete the IOC of the 94th AAMDC, and upgrade the 32nd AAMDC and the 6th ADA Brigade. AMDPCS program funding will stand up the ARNG

164th ADA Brigade and field 92 ADAM Cells to the Army Modular Force.

Forward Area Air Defense–Command and Control (FAAD-C2)

Description. The FAAD-C2 system digitally processes and disseminates real-time target cueing and tracking information, the common tactical air picture, and command, control and intelligence information to MAMD weapon systems. The FAAD-C2 consists of the FAAD engagement operations workstations (EOWS) that provides alerting data to air defense gunners, airspace battle management, and enhances force protection against air and missile attacks. Situational awareness and targeting data is provided on threat aircraft, CMs and UAVs. The FAAD-C2 system enables engagement operations through the integration with the Multifunctional Information Distribution System (MIDS), the Joint Tactical Terminal (JTT), Single Channel Ground and Airborne Radio System (SINCGARS), Enhanced Position Location System (EPLRS), Global Positioning System (GPS), the Airborne Warning and Control Systems (AWACS), the Sentinel radar, and the ABCS architecture. FAAD-C2 is a critical component of the ADAM Cell which enables the maneuver commander's ability to execute effective A2C2.

Program Status. FAAD-C2 is an ACAT II program with an Aug 95 approved ORD. The FY06-11 program plan funds FAAD-C2 fielding to the ARNG (1-174th ADA Battalion, 2-174th ADA Battalion and 1-265th ADA Battalion). FAAD-C2 program funding will provide FAAD EOWS in 92 ADAM Cells.

Air Defense and Airspace Management (ADAM) Cell

Description. The ADAM system provides the maneuver commander with a modular, scalable cell consisting of air defense and aviation personnel/equipment, that is capable of providing airspace management, planning and coordination utilizing third-dimensional situational awareness/understanding obtained from sensors in theater and joint/allied data exchange via the Joint Data Network (JDN). The ADAM Cell is organic at corps, divisions, BCTs, SBCTs and fires brigades and is equipped with AMDPCS and FAAD-C2 systems manned by air defense personnel. AMDPCS includes an AMDWS and an ADSI. FAAD-C2 includes an FAAD EOWS with an intelligence processor. Additionally, the ADAM Cell is equipped with the Tactical Airspace Integration System (TAIS) Airspace Workstation (AWS), and at the SBCT it includes an Aviation Mission Planning Workstation (AMP), both manned by aviation personnel. ADAM Cells will conduct AMD planning and coordination and maintain aerial situational awareness proportionate with the service sensors deployed within the area of operations; provide the commander and staff with the aerial component of the overall common tactical and operational air picture; work with the maneuver units staff to realize the commander's intent with respect to aerial situational awareness and defenses; and monitor the AMD situation while conducting mission, enemy, terrain and weather, time, troops available and civilian (METT-TC) analysis to achieve friendly and enemy third-dimensional situational awareness/understanding.

Program Status. ADAM Cells will be funded through the AMDPCS program element primarily through supplementals and adjustments to the normal programming. Current funding will provide 135 ADAM Cells to meet

the Army modular force MTOE authorizations. ADAM Cells will be assigned one per corps and six per division. Within the division, an ADAM Cell will be located in both tactical command posts and in each of the four BCTs. Additionally, one each ADAM Cell is authorized in the fires brigades. Consideration is being given to ADAM Cells for each modular combat aviation brigade, combat support brigade, and battlefield surveillance brigade. To date, the Army has fielded 20 ADAM Cells and will field an additional 22 in FY06.

Joint Tactical Ground Station (JTAGS) Multi-Mission Mobile Processor (M3P)

Description. The M3P is a P3I of the current, operationally proven JTAGS system. JTAGS M3P is being acquired as part of the mobile ground segment for the Space-Based Infrared System (SBIRS), the successor to the DSP. JTAGS M3P is a transportable missile warning and communications system that receives and processes direct downlink raw data from DSP and SBIRS sensors. The capability supports simultaneous operations in multiple theaters and provides the theater Combatant Commander with organic in-theater tactical ballistic missile threat warning. In addition, the JTAGS M3P with the SBIRS sensors will provide battlespace characterization data for situational awareness. JTAGS M3P will interface with DCGS-A to provide warning and situational awareness data down to the tactical command level. The JTAGS M3P data processor and communications equipment are contained in a 42-foot van and includes two 100-kW generators, three 5-ton cargo trucks, one 5-ton tractor, three tri-band antennas and one HMMWV. The JTAGS program has incorporated a block acquisition approach to upgrade the M3P configuration and meet objective performance requirements. This approach secures an evolving and increasing capability to access the similarly evolving data provided by DSP sensors as the SBIRS constellation replaces the aging DSP inventory. Block 1 maintains supportability and DSP compatibility by applying selected upgrades to the current JTAGS.

Program Status. The Army plans to replace the five fielded JTAGS with the M3P systems, of which three sections are permanently forward deployed, beginning in FY11-12. The Joint Requirement Oversight Council (JROC)-approved requirement calls for a JTAGS M3P force of three full detachments (six sections total). The sixth section is currently not funded. The transition to Block 2 is expected to occur as the SBIRS High Earth Orbit (HEO) and Geosynchronous (GEO) satellites are launched and assume operational capability. With the SBIRS program recertification/replanning underway, the Block 2 baseline program has not been approved. M3P Block 3 is planned to incorporate data from the technologies developed by the MDA and their development efforts with the Space Tracking and Surveillance System (formally SBIRS Low). MDA is conducting technology demonstrations that will lead to a Low Earth Orbit (LEO) constellation that will support the Ballistic Missile Defense System and strategic and tactical missile warning.

AMD Summary

AMD future combat force organizations and systems reflect the culmination of ongoing system improvements, new system capabilities and state-of-the-art technologies. They will be modular, highly mobile, tailorable and interoperable with Army, joint and multinational forces and interagency team members. They will be fully capable of proactively protecting joint forces, providing aerial situational awareness, and contributing to airspace management across the range of military operations. The future force AMD SoS development and subsequent resourcing challenges the Army to pursue and analyze technologies that support valid operational concepts and doctrine. This ongoing analysis will ensure the Army funds effective DOTMLPF solutions that optimize capabilities for the future force.

Space Capabilities Enabling Force Protection

In addition to AMD and CBRNE capabilities supporting force protection, military dependence on such space force enhancement capabilities as position, velocity, navigation, timing services, ISR, communications and weather, terrain, and environmental monitoring (WETM) data continues to grow. Space control is an evolving facet of force protection that helps assure access to these capabilities while denying adversaries the same, thus facilitating freedom of action for maneuver forces and space assets. It involves four interrelated objectives:

- Surveillance of space assets to understand their mission and operations as well as threat characterization and rules of engagement (ROE) validation
- Protection (defensive or offensive) of space systems from hostile actions
- Prevention (active or passive) of unauthorized access to and exploitation of space systems
- Negation (deny, disrupt, deceive, degrade or destroy ground or space assets or communications links between them) of hostile space systems that place the Combatant Commander's interests at risk

Our ever-increasing reliance on space, combined with the advantages an adversary can garner from both foreign government and commercial space capabilities, makes space control a long-term operational priority.

The Army contributes to the nation's space control capability through use of the ground-based space surveillance systems on Kwajalein Atoll. When not committed to Ballistic Missile Defense research and development, these radars help the U.S. Strategic Command identify and characterize potential adversary space capabilities. Tactical surveillance capabilities are also being developed to enhance support to ground maneuver forces. Additionally, the Army is currently using Big Crow, operated by the Army Space and Missile Defense Command (SMDC)/Army Strategic Forces (ARSTRAT) Space Electronic Warfare Detachment (SEWD), as a space control asset to support current operations. Big Crow is a multifaceted electronic warfare (EW) test bed capability that assesses and stresses space control systems in development that also has operational applications. The Army is conducting S&T and research, development, test and evaluation (RDTE) efforts, developing doctrinal, organizational and operational concepts; and planning an acquisition strategy to bring new space control capabilities to the warfighter. The Army is also partnering with sister Services to pursue terrestrial-based space control solutions for direct Army and Joint Force support.

CBRN Defense Capabilities

The Army's dedicated chemical, biological, radiological and nuclear (CBRN) defense units; corps of trained defense experts; and enhanced nuclear, biological and chemical medical treatment capabilities significantly mitigate the effects of threat CBRN weapons employment. The Army's concept to employ focused defense against CBRN weapons enables units to operate at the lowest required protective posture without increasing risk to the Soldier. CBRN reconnaissance and surveillance units, with their point and standoff detectors and battle management/C2 procedures, are the principal means of contamination avoidance. This protection extends throughout the full spectrum to include homeland defense. The Army is augmenting installation commanders with the ability to respond to terrorist and CBRN attacks through dedicated force structure and training.

CBRN defense systems, obscurants and their enabling technologies allow the Army to fully achieve force protection, information dominance and full-dimensional protection in a WMD environment. The Army's CBRN defense strategy is to employ a focused defense against CBRN threats so that only units directly affected by the hazard would be warned to take protective measures. Using focused defense, large numbers of units will no longer assume full protective posture as a precautionary measure. Focused defense allows units to operate in the lowest required protective posture without increasing the risk to Soldiers. The Army's obscuration strategy is to deny the threat's use of the visual as well as the electromagnetic spectrum while preserving our ability to exploit it at will.

In addition to providing the means of general CBRN defense and obscuration common to all units, the Army provides increased CBRN defense and obscuration capabilities with specialized chemical units. CBRN reconnaissance and surveillance units, with their point and standoff detectors, are the principal means of contamination avoidance. Biological detection units provide capabilities to shorten response times to initiate the medical response to the growing threat of biological warfare (BW) agents. Decontamination units restore combat power after resources (personnel, equipment and facilities) are contaminated.

The CBRN defense mission area also includes the Army's efforts to address homeland security. Today, the nation recognizes that CONUS installations and power projection platforms are no longer sanctuaries. The very ability to execute our force projection strategy requires CBRN focused defense over strategic forces and the means to employ them from premobilization through conflict termination and demobilization.

Chemical Vision 2010 is the implementing vision of the Army's CBRN defense modernization effort. It enables the commander to minimize casualties and preserve combat power in a CBRN environment and to create information superiority by using command and control information systems and obscurants. Operationally, if the enemy has an offensive CBRN capability, our primary goal is to deter the threat's use. If deterrence fails, the mission is to defend against a CBRN attack with minimal casualties and degradation, allowing commanders to quickly restore full combat power and continue their mission across the full spectrum of operating environments.

The principles of CBRN defense in *Chemical Vision* are sense, shape, shield and sustain. The principles of obscuration are sense, shape, shield, attack and deceive. These principles support the patterns of operations

in *Army Vision 2010* (protect the force and information dominance) and the principles in *Joint Vision 2020* (full-dimensional protection and information operations).

In providing the CBRN defense and obscuration systems for the Army's transformation strategy, the Army will equip its specialized chemical units and provide CBRN defense and obscuration items common to all units in accordance with the three tenets of the Army's overall modernization strategy: (1) focusing S&T efforts on the future force, (2) meeting immediate SBCT operational needs, and (3) maintaining and improving the warfighting capabilities of the rest of the current force through a judicious combination of selected modernization, recapitalization and sustained maintenance of essential systems. The following paragraphs elaborate on some of the key CBRN systems in the Army's modernization plans, although additional systems are also under development.

Discussion of Key CBRN Modernization Programs

M31A1/M31E2 Biological Integrated Detection System (BIDS)

Description. The BIDS is a collectively protected, shelter-mounted on a dedicated vehicle (HMMWV), and equipped with a biological detection suite employing complementary technologies to detect large-area biological attacks. The M31E2 BIDS is capable of detecting all types of BW agents in less than 10 minutes, and identifying any 10 agents simultaneously in less than 30 minutes.

Program Status. The M31A1 and M31E2 versions of the BIDS are currently fielded. All new activating units will receive the M31E2 version.

Stryker-Nuclear, Biological and Chemical Reconnaissance Vehicle (NBCRV)

Description. The Stryker-NBCRV will incorporate the Block II NBCRV integrated chemical and biological point detectors that will allow on-the-move standoff biological and chemical agent detection. The Chemical Biological Mass Spectrometer (CBMS) Block II will improve the detection and identification of liquid chemical agents while providing a first-time biological agent detection capability to the reconnaissance platform. The Block II sensor suite will automatically integrate contamination information with data from onboard navigation and meteorological systems and rapidly transmit contamination hazard and noncontaminated area intelligence to the appropriate operations center. Integration of the common CBRN technical architecture will allow for expansion/upgrading of the onboard computers at minimal cost, as well as the command and control of CBRN-sensing UAVs and unmanned ground vehicles (UGVs) in the future force system.

Program Status. Stryker-NBCRV Milestone C was reached in 4QFY04, allowing the start of LRIP. Production verification testing and IOT&E are planned for FY06-07. The Stryker-NBCRV will begin fielding to SBCTs in FY06.

M56 Wheeled Smoke System (Coyote)

Description. The M56 Coyote provides large-area, multispectral screening for maneuver and support forces from the M1113 HMMWV. The M56 Coyote can generate large-area obscurants throughout the bat-

tlespace to counter enemy reconnaissance, surveillance and target acquisition systems. Missions include providing static and mobile visual, infrared screening in the form of a haze, blanket and curtain. Major components include a turbine smoke-generating system. It has the capability of providing continuous visual smoke for up to 90 minutes and 30 minutes of infrared screening smoke. A proposed P3I can add a 30-minute millimeter wave obscuring capability to defeat enemy radar RSTA devices and weapon systems. A two-person crew operates the M56 and has the capability to counter the threat arising form the wide proliferation of advanced visual and IR sensors.

Program Status. Fielding of the M56 is complete. Potential limited application of the MMW P3I begins in FY06 to previously fielded systems. The AAO of 265 has been met.

Vehicle Obscuration Smoke Systems (M6 and M7)

Description. Vehicle obscuration smoke systems provide an immediate smoke screen that can obscure threat surveillance, target acquisitions, and weapon guidance systems in the visual through infrared spectrum. The system provides approximately 20-120 seconds of obscuration, which enables the vehicle to maneuver out of the immediate threat area. The M6 countermeasure discharger is installed on Stryker platforms to provide this capability. The M7 Light Vehicle Obscuration Smoke System provides this capability for up-armored HMMWVs. Both systems utilize 66-mm grenades and a launcher configuration of four tubes. Multiple launcher systems are utilized to provide all-around screening capability.

Program Status. The M6 program is currently funded to equip all SBCTs. The M7 is not currently funded to fulfill all requirements for FY08-13.

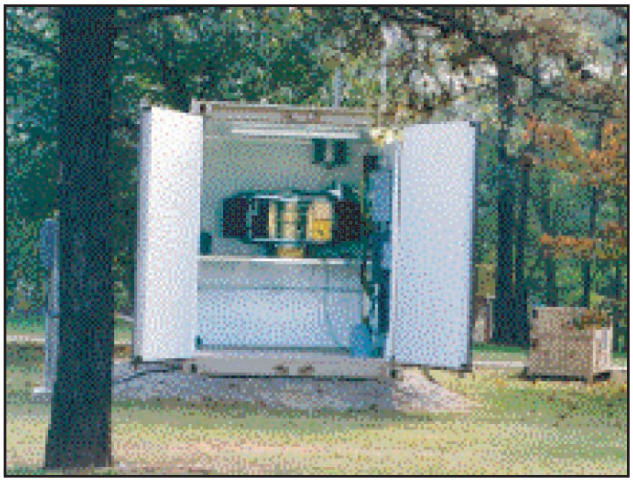
Chemical Biological Protective Shelter System (CBPSS)

Description. The CBPSS is a highly mobile, chemically protected shelter system designed for emergency medical use in the forward battle areas. The shelter consists of an airbeam-supported soft shelter offering 300 square feet of working space, power systems and environmental control equipment. The foldable shelter, power system and environmental control equipment is housed on a lightweight multipurpose shelter, mounted on an expanded capacity vehicle with a modified 1-1/4-ton, high-mobility trailer which has a permanently mounted generator.

Program Status. CBPSS will produce the new M2 electric version in FY06, retrofit the current fleet of 195 systems to the electric version in FY06-07 and produce an additional 174 M3 electric systems beginning in FY07. Fielding will continue through FY11.

Joint Portal Shield (JPS) Detector System

Description. The JPS is DOD's first automated networked biological detection



systems. The system uses an innovative network of sensors to increase probability of detecting a BW attack while decreasing false alarms and consumables. The JPS system can detect and presumptively identify up to eight BW agents simultaneously in less than 25 minutes.

Program Status. The JPS operates in Korea and Southwest Asia. Twelve additional sites have been directed by the Deputy SECDEF for Pacific Command and Central Command Combatant Commanders. The Defense Emergency Response Fund (DERF) funds the upgrade of 237 fielded portal shield units with Biological Aerosol Warning Sensor (BAWS). Fifty-four additional units will be procured as part of CB installation protection equipment.

Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD)

Description. The JSLSCAD is a lightweight, passive, standoff and chemical agent detector capable of providing up to 360-degree, on-the-move vapor detection from a variety of tactical and reconnaissance platforms at distances up to 5 km. The JSLSCAD facilitates enhanced early warning for contamination avoidance and will provide lead time for units and Soldiers to increase their protective posture.

Program Status. The JSLSCAD is in a five-year developmental effort that includes ground-, air- and sea-based platforms. Increment I provides initial capability to the Stryker-NBCRV. Increment II will seek a commercial off-the-shelf solution to support all ground-mobile, fixed-site and shipboard applications, achieving FRP in FY08. Increment III will integrate and test the Increment II design into aerial platform applications.

Joint Chemical Agent Detector (JCAD)

Description. JCAD will be a combined portable monitoring and small point chemical agent detector for individual Soldier applications. This handheld, pocket-sized detector will be designed to automatically detect, identify and quantify chemical agents. The primary function of the JCAD is as a chemical weapon agent (CWA) point detector that can be used to detect, identify, quantify and warn personnel of the presence of vapor CWAs.

Program Status. Testing of a candidate system is underway at Edgewood Chemical Biological Center. Increment I fielding is scheduled for 4QFY07.

Joint Chemical, Biological, and Radiological Agent Water Monitor (JCBRAWM)

Description. The JCBRAWM will provide the warfighter the capability to detect, identify and quantify the presence of CBR contamination in water. The ICD, approved 2 Apr 04, describes the need for monitoring to protect the warfighter from drinking or using contaminated water. The JCBRAWM will detect and identify CBR agents during three water-monitoring missions: source site selection, treatment verification and quality assurance of stored and distributed water.

Program Status. Milestone A entrance criteria were approved by the Joint Service Technology Office (JSTO) in FY05 for the Chemical Biological Defense Program to transition from concept refinement to technology development. Milestone A is scheduled for Dec 05.

Joint Warning and Reporting Network (JWARN)

Description. The JWARN provides standard integration and analysis of NBC detection information with command, control, communications, computers, information and intelligence (C4I2) on the battlefield. JWARN automates the NBC warning and reporting processes now performed manually throughout the Services. It will provide additional data processing, production of plans and reports, and access to specific NBC information to improve the efficiency of NBC personnel.

Program Status. Block I (D) software featuring some functionality has been fielded and is in use in many major Army commands (MACOMs). The JWARN IOC is scheduled for 1QFY08. IOC will be achieved when JWARN is fielded to initial units and training bases, unit personnel are trained, training base is established, and a maintenance system is in place.

Joint Effects Model (JEM)

Description. JEM will provide the commander with advanced modeling and simulation capability to forecast and display the effects of CBRN events, including toxic industrial hazards (TIH), based on inputs from JWARN-networked sensors, intelligence and other units. JEM supports force protection and operational deployment planning by providing critical CBRN/TIH planning and defensive information.

Program Status. JEM Increment-I is currently in the SDD acquisition phase. Milestone C is expected in 3QFY06.

Joint Portable Decontamination System (JPDS)

Description. JPDS will be a man-portable system consisting of decontamination applicators and decontaminants for use primarily in immediate and operational decontamination operations.

Program Status. IOC Increment I is scheduled for FY12. FOC Increment I is scheduled for FY13.

Joint Service Sensitive Equipment Decontamination (JSSED) System

Description. The JSSED system will provide a nonaqueous capability to decontaminate CB warfare agents on high-value or sensitive equipment that cannot be decontaminated and reused through current decontamination procedures. The JSSED decontamination process can reach into contaminated areas of equipment that are not accessible via a surface wipe. JSSED will limit the transfer of contamination, restore mission essential functions, increase survivability, lower the levels of MOPP sooner, lower logistics costs through the reuse of high-cost sensitive equipment, and allow maintenance personnel to be able to work on the equipment without having to wear protective clothing.

Program Status. IOC is scheduled for FY12. FOC is scheduled for FY14.

Joint Service Transportable Decontamination System (JSTDS)

Description. This mobile system provides the capability to conduct operational and

thorough decontamination of medium-to-large mobile or fixed equipment, aircraft, facilities, shelters, surface areas and terrain. The small-scale system (JSTDS-SS) replaces the M17 LDS and M12A1s in non-SRC03 units. The small-scale system will not require MHE and will not require a dedicated vehicle.

The large-scale system (JSTDS-LS) will be integrated into or mounted on a dedicated vehicle/system. Specifically, this will be a cross-spectrum system designed to support current and future forces, or homeland security operations. It will be capable of decontaminating fixed sites, terrain, large aircraft and seaports of debarkation (SPODs)/aerial ports of debarkation (APODs).

Program Status. For the JSTDS-SS, Milestone B ORD was signed on 1 Mar 04. Milestone B was achieved 18 Jan 05. Milestone C decision is scheduled for Apr 06. IOC is scheduled for FY10. FOC is scheduled for FY12. For the JSTDS-LS, Milestone B ORD was signed on 1 Mar 04. IOC of 350 systems is scheduled for FY13. FOC is scheduled for FY15.

Joint Service Personnel/Skin Decontamination System (JSPDS)

Description. JSPDS replaces the M291 SDK and will decontaminate the skin, individual equipment and weapons of personnel and casualties, including those with wounds that have been exposed to CBRN warfare agents/contamination and toxic industrial materials/toxic industrial chemicals (TIMs/TICs) and nontraditional agents (NTAs). IOC is scheduled for FY07 and will be achieved when JSPDS is fielded to forward-deployed units, rapid deployment units and the training base; unit personnel are trained; a training base is established; and a maintenance system is in place.

Program Status. Milestone B was achieved on 18 Jan 05. IOC is scheduled for FY10. FOC is scheduled for FY13 and will be achieved when the JSPDS AAO is reached and all authorizations are filled. Total number of systems is 2,285,451.

Joint Platform Interior Decontamination System (JPID)

Description. The JPID system will provide the capability to decontaminate CB warfare agents within interiors of aircraft, vehicles, ships and buildings (to include avionics, electrical, electronic and environmental system equipment) and the associated cargo without damaging surfaces or sensitive equipment within the platforms. The JPID will provide immediate, operational and thorough decontamination capabilities in hostile and nonhostile environments. Currently, no standard methods of decontamination of platform interiors exist. This capability will provide the warfighter the means to maintain operational tempo and ensure platforms are not sidelined from the mission environment due to interior CB contamination. The JPID system will significantly enhance the future force's ability to remain mission capable in a CBRN environment

Program Status. The IOC for this system is projected in FY10, with FOC planned for FY13.

M100 Sorbent Decontamination System (SDS)

Description. The M100 SDS uses a reactive sorbent powder to remove chemical agents from surfaces. Use of the M100 SDS decreases decontamination time and eliminates the need for water.

Program Status. With initial issue complete, the M100 is now available for purchase using normal supply channels.

Joint Service General Purpose Mask (JSGPM)

Description. The XM50 and XM51 are two new protective masks that make up the JSGPM lightweight mask system. Each mask consists of a face-blank assembly (singular skin molded in small, medium and large sizes, and incorporating provisions for lenses), front module cover, head harness assemble (mesh-type head harness), self-sealing valve, inlet/outlet valve, internal drink tube (external drink tube assemble), carrier, waterproof bag, canteen cap, dust cover, laser outsert, primary filters (filters out chemical/biological agents, and radioactive and other particles from contaminated air), operator cards and accessories as required. The masks allow intelligible voice transmissions (face to face and three meters apart).

Program Status. The JSGPM mask program will begin FRP in Oct 06 and will accomplish FUE in Dec 06. Fielding is scheduled to continue beyond FY11. The program is funded for a total of 2, 344,168 masks to support the Army, Air Force, Coast Guard, Marine Corps and Navy requirements. The XM50 mask replaces the existing M40 individual mask, and the XM51 replaces the M42 crew member mask. The older masks are at the end of their service life.

Joint Biological Agent Identification and Diagnostics System (JBAIDS)

Description. The JBAIDS program is the first effort by the DOD to develop and field a common medical test equipment platform among all the Services. JBAIDS is an evolutionary, three-block, reusable, portable and modifiable biological agent identification and diagnostic system capable of simultaneous reliable identification of multiple biological agents of operational concern and other pathogens of clinical significance. JBAIDS Block I tests a variety of environmental samples and clinical specimens for nondiagnostic purposes, and performs confirmatory testing of samples collected by existing and future biological detection systems. Block II focuses on the militarization and hardening of critical toxin identification technologies based on a COTS/NDI candidate system. JBAIDS Block III is planned to be a handheld, FDA-approved device capable of providing the full range of biological agent identification and diagnostics.

Program Status. Block II development is scheduled for FY07.

National Guard Weapons of Mass Destruction Civil Support Team (WMD-CST) Unified Command Suite (UCS)

Description. The UCS provides the WMD-CST with mission essential C4 support. The UCS capability includes state-of-the-art radio, and satellite and cellular communications subsystems that will provide dedicated LOS and NLOS secure and nonsecure intra-team and intra-vehicular voice and data reach-back. The UCS provides voice, data and video reachback capabilities to WMD-CST operations centers, incident command posts, and the various military forces, federal, state and local law enforcement and emergency service units that support domestic incident responses. These communications subsystems operate in handheld, base station and vehicle configurations capable of interoperating with military and commercial radio communications systems in various terrain and urban environments.

Program Status. In production and fielded with National Guard WMD-CSTs throughout the United States. This system is currently not overseas deployable.

National Guard Weapons of Mass Destruction Civil Support Team (WMD-CST) Analytical Laboratory Suite (ALS)

Description. The ALS provides the WMD-CST with a mobile laboratory capability that allows CST commanders to analyze samples on-site in support to the first responder incident commander. The ALS is a mobile analytical laboratory capable of providing the CST a presumptive analysis for the presence of chemical, biological or radiological contamination. The ALS is a System Enhancement Program to replace the current Mobile Analytical Laboratory System and interim Dismounted Analytical Platform. The ALS provides advanced technologies with enhanced sensitivity and selectivity in the detection and identification of chemical warfare agents and toxic industrial materials.

Program Status. In production and fielded with National Guard WMD-CSTs throughout the United States. This system is currently not overseas deployable.

CBRNE Installation Protection Program (IPP)

Description. This program, initiated after the catastrophic attacks in 2001, will provide installations with an integrated and effective CBRNE installation protection capability consisting of CBRNE detection, identification, warning, protection, decontamination, information management, medical protection, surveillance and response. The program objective is to improve the installation's emergency first responder capability and leverage existing physical security, logistics, sustainment, maintenance and C2 capabilities to maximize effectiveness while reducing the resource impact (time, funding and personnel) on the installation.

Program Status. The first installations fielded with their initial CBRNE response capability sets were in FY05. The remainder of the initial 62 installations will be equipped through FY11. This program is currently funded to address 62 of 187 Army posts. The systems provided to the installations are not deployable.

CBRN Summary

Among the significant changes to the future strategic environment, proliferation of WMDs is recognized as a principal asymmetric threat capable of providing an adversary military advantage to neutralize overwhelming conventional superiority. Having an effective CBRN defense is a necessary component of any defense strategy that seeks to demonstrate to the adversary that use of WMDs will not gain the advantage sought. Modernizing the force while conducting a robust S&T effort is critical to preventing technological surprise from new CB agents or different employment means. Recapitalizing and maintaining the current force is necessary to enable transformation and mitigates risk by extending the useful life of current systems within fiscal constraints. This modernization plan assures a disciplined approach to meeting mission-based requirements and secures orderly change as we transition to the future force.

Discussion of Key Equipment Protecting Against IEDs

Warlock/CREW

Description. Warlock is a family of electronic

countermeasure systems designed to protect personnel and vehicle convoys and provide gate security from radio-controlled improvised explosive device (RCIED) ambushes. It is a quick-reaction capability (QRC) developed by the Army, Navy and U.S. Special Operations Command (USSOCOM) that is currently providing force protection in Operation Iraqi Freedom and Operation Enduring Freedom. The new term used for electronic countermeasures is Counter RCIED Electronic Warfare (CREW). While the Warlock name is still used, the Warlock family of systems is considered CREW Increment 1.

Program Status. Warlock/CREW is not a program of record and is not included in the FY06-11 program plan. This initiative program is sponsored by the Joint IED Defeat Organization, which coordinates all counter IED efforts within DOD. Funding has been received from congressional additions, the Iraqi Freedom Fund, the Rapid Equipping Force (REF), and a DOD funding decision. Working against a rapidly evolving threat, the CREW program manager awarded a contract in Jun 05 to produce, field and support a next-generation capability against RCIEDs, with ongoing efforts to surge and accelerate the production schedule in support of the global war on terrorism requirements. The new contracted system is called CREW Increment 2 (CREW-2). It is anticipated that CREW-2 will become an Army program of record beginning with the FY08-13 program plan. Currently, nearly 20,000 CREW Increment 1 devices are fielded in support of OIF/OEF.

Appendix 3: Focused Logistics (FL)

Simply put, focused logistics (FL) means providing the most effective and efficient full-spectrum logistics support to the joint warfighter. FL ensures we provide the Joint Force with the right personnel, equipment, supplies and services in the right place, at the right time, in the right quantities across the full range of military operations. The *Army Modernization Plan* includes critical programs to achieve our three major thrusts of achieving visibility of the entire logistics domain including requirements, resources and priorities; responding with speed and precision to meet the needs of the Combatant Commander; and ensuring logistics unity of effort across the Joint Operations Area (JOA). This appendix provides a brief discussion of the Army's FL capabilities that support required Joint Force capabilities and the key materiel programs associated with these capabilities.

Improving Unity of Effort

The Army must ensure unity of effort in planning and executing logistics operations across the JOA. We will achieve logistics unity of effort through theater sustainment commands (TSCs) and a command and control structure that links all Army theater logistics units to a single command and control element that is also joint-capable. We have transformed our logistics forces to provide TSCs that are regionally focused and globally employable and that have deployable command posts capable of rapidly establishing and sustaining operations. These TSCs have reachback capability to the CONUS sustaining base through the Army Sustainment Command, a major subordinate command of the Army Materiel Command. These interconnected commands, closely linked with our joint and strategic logistics partners, will provide us the ability to rapidly open a theater, effectively coordinate logistics efforts to support the Joint Force commander, and maximize efforts of the end-to-end logistics domain to sustain operations.

We have resourced modular BCTs to be self-sustaining for expeditionary operations. Above the BCT level, our sustainment brigades and their subordinate modular units provide the capabilities to support units within their area of operations for extended campaigns. Providing the right balance between brigade CSS and echelon-above-brigade CSS will ensure we achieve an expeditionary Army with campaign qualities that operates as a critical part of the joint force.

Our modular units will employ advanced technologies, including an extensive array of networked ground, air and space sensors to provide the commander an unprecedented logistics operating picture. Future data fusion and architectures such as the Army's LandWarNet, coupled with innovative leader training, will enable logistic decision-makers visibility of synthesized sustainment requirements. The COP will provide near real-time status and locations of inventories to effect combat power. This will enable the commander to develop and evaluate effective offensive and defensive courses of action in line with logistical parameters.

The COP allows leaders of the Joint Force to understand current logistics postures and supplies and the ability to respond to known requirements. Leaders at all levels—strategic, operational and tactical—will use the COP to analyze and share assessments through a collaborative planning process enabled by information technologies. This is made possible through a real-time, web-based information system providing accurate, actionable visibility as part of a common logistic operating environment (CLOE), effectively linking the operator and the logistician across joint forces and from foxhole to the national level. Key support functions include deployment distribution, global mobility, ability to sustain the force and medical support to combat forces.

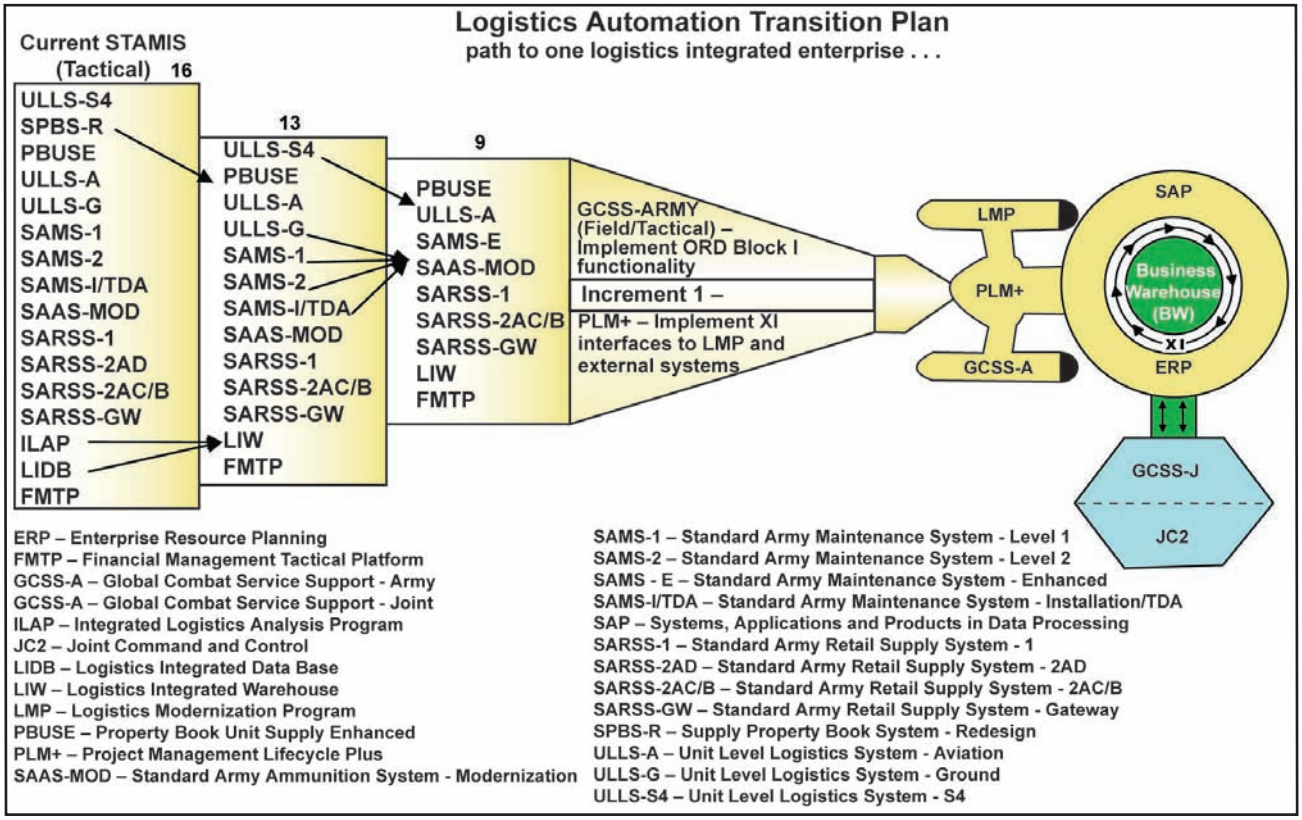


Figure D-8. Logistics Automation Transition Plan

Future force commanders will be able to leverage this information to enhance collaborative planning, reduce the decision cycle, seize the initiative, and build combat power prior to, during and after operations. To achieve the required unity of effort and domain-wide visibility, the Army will migrate 16 current logistics standard Army management information systems (STAMIS) into GCSS-Army to create a single logistics integrated enterprise as shown in Figure D-8. These systems are currently used in every unit in the Army to provide maintenance, supply, ammunition, property, fleet and tactical financial operations and management. By transforming these systems into a single, integrated enterprise that incorporates interoperable joint capabilities and best business processes, we will increase unity of effort in planning and executing Army and joint operations.

As we implement this migration we must continue to maintain and upgrade our current systems until our enterprise system, GCSS-Army, is fielded. We will continue the fielding of BCS3, which is embedded within the ABCS. ABCS/BCS3 is interoperable with both joint and multinational systems and has improved the connectivity between tactical, operational and strategic units and provides a logistical COP to all commanders. We will also continue fielding the Medical Communications for Combat Casualty Care (MC4)/Theater Medical Information Program (TMIP) applications that link the combat medic to field health care facilities.

Discussion of Key Unity of Effort Programs

Global Combat Support System-Army (GCSS-Army)

Description. GCSS-Army is the primary enabler of the Army's Combat Support/Combat Service Support (CS/CSS) transformation. GCSS-Army streamlines the CS/CSS tasks and provides a web-based, Enterprise Resource Planning (ERP) solution replacing all existing stovepiped logistics STAMIS. GCSS-Army provides CSS information and field services management at the Army's tactical and operational levels. GCSS-Army has two components: a functional component for deployable forces titled GCSS-Army Field Tactical (GCSS-Army (F/T) and a technology-enabler component titled Product Life-cycle Management Plus (GCSS-Army (PLM+). GCSS-Army (F/T) and GCSS-Army (PLM+) coupled with the Logistics Modernization Program (LMP) make up the three key components of the Single Army Logistics Enterprise (SALE) architecture.

Program Status. GCSS-Army is currently in the technology development phase. Active Army MACOM, National Guard Bureau and Army Reserve subject matter experts from the Quartermaster, Ordnance, Aviation, Transportation, Medical and Finance Corps have joined forces with SAP consultants, Northrop Grumman (lead system integrator) and engineers from the U.S. Army Information Systems Command to form the GCSS-Army team. Blueprinting workshops have described and refined current Army logistics processes, determine "best fit" for those processes using SAP COTS software, and produce detailed models of the "to be" business processes. These have been adapted into proven industry best business practices in order to modernize CS/CSS automated procedures. GCSS-Army is scheduled for Milestone B acquisition decision in 2QFY06.

Battle Command Sustainment Support System 6.4 (BCS3)

Description. The BCS3 is a decision-support system embedded within the overall ABCS

that assists commanders and their staffs in planning and executing CSS operations and is key to building and sustaining combat power in a continuous operational environment over extended distances. BCS3 will rapidly collect, store, analyze and disseminate critical logistics, medical and personnel information. BCS3 is the CSS component of the ABCS, as well as a key logistics enabler in the Army's transformation efforts, and will be interoperable with GCSS-Army. BCS3 is comprised of computer units, common operating software and unique software. BCS3 is deployable in a tabletop configuration, with or without storage/transit cases, and in Standardized Integrated Command Post System (SICPS) configurations.

Program Status. Completed fielding BCS3 6.4 to the 4th ID (designated test unit) in Nov 04, and fully engaged in the Army G-3-approved ABCS 6.4 fielding. BCS3 6.4 will continue to field to ABCS 6.4 designated units, along with HQDA-directed fieldings to support other deployed, deploying and transforming units.

Medical Communications for Combat Casualty Care (MC4) System

Description. The MC4 system is a theater level, automated combat health support (CHS) system that links commanders, health care providers and medical support providers at all levels with seamless, integrated medical information. It will receive, store, process, transmit and report medical C2, medical surveillance, casualty movement/tracking, medical treatment, medical situational awareness, and medical logistics data across all levels of care. The MC4 system is fully operational with standard Army systems and operates on standard commercial hardware. The MC4 system is fully joint-operations compatible and operates from a family of joint software. The MC4 system supports the commander with a streamlined personnel deployment system using digital medical information.

Program Status. The MC4 program has a JROC-approved ORD. The program received an Acquisition Decision Memorandum for a successful FRP on 21 Jul 05. The program's C4 Integrated Support Plan (C4ISP) was approved by the Army G-6 on 13 Sep 05. The MC4 program will continue to field systems in accordance with the Army Campaign Plan and priorities.

Achieving Domain-Wide Visibility

Our success in future campaigns relies on a joint-capable logistics community that maintains domain-wide visibility over requirements, resources and priorities.

Our vision is that warfighters and logisticians will have total situational awareness of all aspects of logistics, from laboratory to factory to foxhole and back. Army logisticians will provide certainty to the supported Joint Force commander—certainty that forces will receive the right support, at the right place, at the right time, across the full spectrum of military operations.

Domain-wide visibility is also key to reducing stockpiles in theater through sustained velocity management and real-time tracking of supplies and equipment.

Future combat force units will "see first" by identifying current status of equipment readiness, anticipating sustainment requirements, and ensuring the flow of logistics to enhance combat power. Our programs to achieve unity of effort are also integral to improving domain-wide visibility. GCSS-A, BCS3 and Transportation Coordinators' Automated Information for Movement System II (TC-AIMS II) will enhance the deployment and sustainment of forces by facilitating the exchange of data between Army units and the Combatant Commanders, thus providing improved visibility and enabling faster response to unforeseen circumstances.

Today, sensors (RF tags and interrogators) coupled with the Movement Tracking System (MTS) have enabled a clear picture of the movement of supplies to the warfighter. Property Book Unit Supply Enhanced (PBUSE) and Standard Army Maintenance System (SAMS-E) remain critical to visibility, control and maintenance of Army equipment. In the future, the Army will continue efforts to more effectively connect our logisticians and further improve visibility over requirements, resources and priorities.

Discussion of Key Domain-Wide Visibility Programs

Movement Tracking System (MTS)

Description. MTS is a critical logistics transformation enabler. It provides continuous CS/CSS asset visibility and situational awareness for the joint logistics corporate enterprise, enables expeditionary logistics, and is a key step in achieving the sense-and-respond capabilities required to support network-centric warfare operations. MTS assists CS/CSS unit commanders in planning and executing operations with the capability to identify and track positions, monitor progress, and communicate with tactical wheeled vehicles supporting CS/CSS operations essentially anywhere in the world. MTS supports BFT by passing position location information into the logistics COP via BCS3. MTS is a satellite-based tracking/communications system consisting of mobile units, transceivers, control stations, a GPS, common operating software and MTS-unique software.

Program Status. MTS has been fielded with priority given to units supporting OIF.

These have included the 3rd ID, 4th ID, 10th Mountain Division, 101st Airborne Division (Air Assault) and SBCTs. The system will continue fielding with phased upgrades to include embedded GPS, integrated radio frequency identification (RFID) and anti-spoofing technology.

Property Book Unit Supply Enhanced (PBUSE)

Description. PBUSE is the Army's web-based property accountability system. PBUSE replaces the Standard Property Book System-Redesign (SPBS-R) and Unit Level Supply System-S4 (ULLS-S4) to network and simplify accounting for property. PBUSE provides centralized asset accountability and complies with the Chief Financial Officer (CFO)/Federal Financial Management Improvement Act (FFMIA). Army-wide improvements include an enterprise assets database, graphical user interfaces and process improvements to simplify lateral transfers. PBUSE enables the modular Army to transfer, task-organize, replenish and account for property. It is a key enabler for converting the Army to modular formations, equipping the force, and ensuring end-to-end visibility and property accountability.

Program Status. The Army is completing its fielding of PBUSE to property book offices and will complete the unit-level fieldings in FY07.

Standard Army Maintenance System (SAMS-E)

Description. SAMS-E is the Army's web-enabled maintenance management system. SAMS-E replaces Unit Level Logistics System-Ground (ULLS-G) and three legacy echelons of SAMS to network and simplify maintenance management, enable two-level maintenance, and comply with DOD requirements for materiel condition status reporting. SAMS-E modernizes the Army's automated unit-level maintenance, repair parts supply, readiness reporting and automated dispatching. SAMS-E, when linked via CSS SATCOM, eliminates the requirement for an inefficient "sneaker-net" and delivers repair parts in record time. SAMS-E also simplifies the means to task-organize units for support, provides orphaned unit maintenance, and serves as the key enabler for efficiently maintaining the force.

Program Status. The Army has begun fielding of SAMS-E to modular, deploying forces and will complete fielding in late FY07.

Improving Rapid and Precise Response

Logistics success in an expeditionary environment is measured in our ability to respond with speed and precision to operational needs of the joint force. These needs encompass both deployment and sustainment over time.

Title 10, U.S. Code, states that the Army is responsible for conducting prompt and sustained operations on land as a component of the Joint Force. Fulfilling this responsibility rests, to a very large extent, on the Army's ability to rapidly project lethal, survivable and sustainable combat power as part of the joint force. While the Army depends on Joint Force projection capabilities, we continue our own efforts to enhance our deployment capability and responsiveness while reducing our deployment requirements.

We have increased our capabilities to defeat both anti-access and area-denial efforts through speed of deployments, leveraging information technology, modular force design, future concepts and improved equipment. The Army provides unique capabilities to

achieve, enhance and maintain assured access. We have reviewed the current security environment and initiated actions to reposition forces and equipment to support today's security environment and tomorrow's emerging threats. Forward-deployed forces, prepositioned stocks, regional bases/strategic flotillas and facilities, assured access through standing agreements with allies and other nations, regional engagement by special operations and conventional forces, and multinational exercises are all instrumental in shaping a position of strength in a given region.

Force Projection and Sustainment Lift Capabilities

Previous wargames and analysis efforts have shown that advanced strategic and intra-theater air- and sealift platforms are required to support/enable our future warfighting concepts. Future lift platforms must provide enhanced capabilities to meet the warfighter's force projection, distribution and sustainment requirements.

Sealift

Most current DOD sealift platforms are deep draft vessels (≥ 30 feet) that require commercial deep-draft ports to load and offload unit equipment (roll-on/roll-off). Current DOD and commercial vessels which move either containerized equipment or sustainment stocks also require the developed infrastructure (cranes, piers, staging yards) of major commercial ports to support vessel loading and offloading operations. The availability of such ports is limited worldwide and they are located in the commercial and population centers of most countries. These major seaports of entry represent highly predictable and limited locations for DOD force projection and sustainment operations. These ports make our operations vulnerable to many anti-access measures which would jeopardize the deployment of the Joint Force. Advanced joint sealift capabilities that enable us to rapidly project forces to multiple smaller, more austere (less infrastructure) ports of entry and to interface with other sealift platforms within a joint sea base are critical to support efforts required to defeat expected anti-access and area-denial efforts in the future. Inter- and intra-theater sealift vessels that combine the attributes of high-speed, shallow draft and self-employable cargo load and offload systems can leverage a far larger number of ports beyond the limited number (and geographically located) large commercial ports of the world. Advanced sealift platforms support the concept of multiple, parallel seaports of debarkation, fundamental in overcoming anti-access challenges.

Airlift

Existing strategic air platforms such as the C-5 Galaxy and C-17 can carry enormous loads, but are dependent on world-class airports for both embarkation and debarkation. The C-17 provides the only capability today of bypassing these major chokepoints from appreciable distances while maximizing load capacities. Even so, the C-17 is still constrained to at least a 3,000-foot runway and in many cases (weather, terrain and environment dependent) may require longer runways. The C-130, in its intra-theater role, is hampered by significant payload, altitude and range limitations and cannot be refueled in air. These capability limitations not only severely constrain our ability to execute assured access strategies, they demand a nearby intermediate staging base to transload equipment, personnel and sustainment from inter- to intra-theater lift platforms and to provide a refueling base for intra-theater platforms. None of the airlift platforms are suitable for air sustainment, nor can they support rapid shift of maneuver

forces and sustainment across the breadth and depth of the battlespace.

To overcome the limitations of these strategic air platforms, larger-capacity Super Short Takeoff and Landing (SSTOL) and/or Heavy Lift Vertical Takeoff and Landing (HLVTOL) platforms are required in substantial quantities for air movement of the future force. Shallow-draft, high-speed sealift and advanced, intra-theater sealift designs are required for austere seaport access. Whether the goals encompass operational maneuver from strategic distances, use of multiple simultaneous austere points of entry, vertical maneuver and envelopment, dominant maneuver, precision engagement and focused logistics, SSTOL and HLVTOL technology solutions are needed sooner rather than later.

These kinds of platforms further provide a quality of versatility and adaptability necessary to enable Army and Joint Force commanders to adjust movement of forces and sustainment in stride in response to the evolution of the campaign and the enemy's own actions. Funding the S&T and procurement required to bring advanced lift capabilities to the Joint Force is a joint challenge. The Army alone cannot develop, procure and field such systems due to both budgetary and regulatory constraints. Instead, the Army encourages joint S&T emphasis on the following efforts.

Strategic High-Speed Sealift (SHSS). An SHSS is a strategic sealift ship (CONUS to JOA) that can deliver troops, equipment and sustainment together in sufficient size and at a considerable speed to provide immediate combat power to the Joint Force commander. Because it has been optimized (draft, length, beam) to operate in ports other than the world's limited deep-draft commercial ports, it can project DOD units (equipment, personnel and initial sustainment stocks) in a far greater number of locations than current DOD and commercial sealift assets. With a C4I suite onboard, commanders can conduct en route planning, receive intelligence updates and integrate with the Joint Force commander.

Super Short Takeoff and Landing (SSTOL) Aircraft. The SSTOL is a joint aircraft with the ability to carry two FCS platforms 3,500 miles. It can land on 750 feet of road or field in the joint area of operations, which avoids fixed airfields and adds innumerable points of entry. It provides the Joint Force commander the ability to achieve operational surprise.

Heavy Lift Vertical Takeoff and Landing (HLVTOL) Aircraft. The HLVTOL is an aircraft with the ability to deliver one FCS within a radius of 1,000 miles. The ability to insert combat vehicles vertically gives the commander unparalleled speed and agility. Generally independent of ground conditions, it enables the Joint Force commander to conduct vertical envelopment and vertical maneuver, as well as the ability to avoid predictable, linear patterns of operation. It also offers significant benefits to vertical joint logistics over-the-shore.

Low-Cost, Low-Altitude (LCLA) Airdrop Systems. LCLA is a rapidly deployable aerial resupply capability that enables and enhances logistics support to small units operating substantial distances from forward operating bases in remote, austere and hard-to-reach locations with very limited or no materiel-handling equipment and no viable airstrips to conduct air/land operations. LCLA systems cost no more than $375 per delivery system (not inclusive of supplies or cargo), are flexible and simple enough to be rigged and deployed with no specialized rigging, and can be airdropped from fixed-wing aircraft, rotary-wing aircraft or UAVs. LCLA systems can deliver up to 300 pounds of properly pack-

aged and preconfigured supplies no more than 75 meters from a predesignated impact point (IP) from an altitude of 500 feet above ground level (AGL) to as close to ground level as possible with no damage and in a condition that enables recovery by two or three Soldiers in less than five minutes per load. This capability enhances small-unit operations.

Sustainment Capabilities

Army forces must be sustainable across the spectrum of conflict. Sustainability requirements reflect the continuous, uninterrupted provision of combat service support to Army forces.

To sustain warfighters, logisticians must be able to anticipate and confirm operational requirements and then provide the right capabilities at the optimum place and time. The new concept of support relies on synergies achieved by fielding not only materiel and technology solutions, but also organizational and educational changes. This operational transformation, combined with our institutional business process transformation and policy innovation, is the basis of the Army's logistics transformation.

Discussion of Key Rapid and Precise Response Materiel Programs

Joint High Speed Vessel (JHSV)

Description. The JHSV is an intra-theater lift platform that provides advanced capabilities for the operational maneuver of combat-ready units and sustainment to smaller theater ports or sheltered shoreline areas within a JOA. The JHSV program is based upon a high-speed (40+ knots), shallow-draft, sealift platform that will maximize current commercial high-speed ferry technology. The JHSV provides the capability to conduct operational maneuver

and repositioning of intact unit sets while conducting en route mission planning and rehearsal. This intra-theater vessel provides the Combatant Commander with increased throughput, increased survivability, increased responsiveness and improved closure rates. It provides an alternative to intra-theater airlift within many theaters and allows the Joint Force commander to rapidly insert combat forces into austere ports. JHSV would provide theater force projection and sustainment lift to deploying units arriving by strategic lift (air, sea) to a theater. The vessels would be utilized to move Army prepositioned stocks (APS) located on land or afloat. JHSV supports traditional joint logistics over-the-shore (JLOTS) and future seabasing operations within an anti-access/access-denial environment. This transformation enabler helps meet force deployment goals as well as achieve full distribution-based logistics.

Program Status. The Department of the Army and Department of the Navy are combining their requirements and merging the Army's Theater Support Vessel (TSV) and the Navy's High-Speed Intra-Theater Surface Connector programs. Although the Army initially determined a requirement for 24 vessels and a critical requirement for 12 vessels, a joint requirements and solution set has not yet been determined. To insure joint interoperability, minimize redundant capabilities and gain economies of scale, the

Army and Navy have signed a Memorandum of Agreement which assigns the acquisition lead for the JHSV program to the Navy. The plans for funding the JHSV program will be determined as part of the joint acquisition process where the Navy and Army will jointly source RDTE 50/50. Each department will source their Service-unique developmental costs and each will separately fund vessels to meet their own requirements.

Joint Precision Airdrop Systems (JPADS)

Description. JPADS is a high-altitude-capable, autonomously operated precision airdrop system. The system consists of a family of different-sized airfoils, allowing airdrop of weight categories up to approximately 42,000 pounds. JPADS is not totally wind dependent and is releasable from altitudes up to approximately 25,000 feet mean sea level. Based upon winds and release altitude, 35-km standoff distances are also possible. Space-based GPS technology provides for aerial navigation/maneuverability throughout descent, steering into the wind as necessary, and permitting highly accurate ground touchdown locations. JPADS is a critical logistics transformation enabler that facilitates dedicated aerial sustainment and helps achieve full distribution-based logistics.

Program Status. Program maturity for JPADS capabilities continues through FY06. The Milestone B decision for the 2,000-pound variant is scheduled for 2QFY06. The 10,000-pound variant is currently an ACTD which is undergoing military utility assessments through FY06. The ACTD is expected to transition to program management in 1QFY07. The 30,000-pound variant is an ATO with expected transition to program management in 4QFY08. The 42,000-pound variant is currently unfunded.

Advanced Aviation Forward Area Refueling System (AAFARS)

Description. AAFARS M100A1 is a modular, four-point refueling system. The principal components are engine, pump, filter and control modules, along with hoses, nozzles, couplings, defueling pump, fuel blivets (500-gal drums), fire-suppression equipment, fuel spill containment berms, nozzles and fuel test kit. The AAFARS is transported inter-theater in three specialized shipping containers.

Program Status. Fielding began in Oct 04.

Petroleum Quality Analysis System (PQAS)

Description. The PQAS is a complete petroleum quality surveillance (QS) laboratory capable of conducting B-level testing in accordance with MIL-STD-3004 on kerosene-based (e.g., jet propellant (JP)-5, JP-8, Jet A, Jet A-1) and diesel military mobility fuels.

Program Status. Nineteen PQAS are scheduled for fielding in FY06 to combat aviation brigades.

Tactical Electric Power (TEP)

Description. TEPs are all-mobile, engine-driven, electric power generating sources,

750 kW and smaller, which are skid mounted, trailer mounted or man portable. TEPs are capable of independently producing electric power when operating on diesel, JP-8 or other fuel sources. Included are follow-on power sources such as fuel cells and thermoelectric devices. These mobile, tactical generators provide quality power to operate DOD systems away from a fixed power grid and are found in nearly every organization in the Army. They directly support all field electrical systems such as C4ISR, medical, maintenance, fire direction and controls, target acquisition, life support, sustainment and illumination. These functions are critical to mission accomplishment across the entire spectrum of military operations.

Program Status. TEP Tactical Quiet Generators (TQGs) are currently in production and being fielded. The next generation of TEP generators, the Advanced Medium Mobile Power Sources (AMMPS), reached Milestone B in Nov 03 and begins production in FY08. To date, 72 percent of the older MILSTD generators have been replaced by TQGs and 19,000 remain to be replaced by TQGs and/or AMMPS.

Standard Automotive Tool Set (SATS)

Description. SATS is a modular, flexible, standardized automotive maintenance shop system that will replace the most numerous types of field level shop sets. SATS enables a modular, expeditionary, campaign-quality force and supports the Army maintenance transformation to a two-level system. The SATS consists of a transportable, International Standardization Organization (ISO) 8x8x20 container with an integrated government-furnished, electric power generator and Environmental Control Unit (ECU). The container includes secure storage space for a complete base set of COTS and government-furnished, industrial-quality tools and equipment needed to perform field-level maintenance of military vehicles and ground-support equipment. The SATS system is a base tool set of the most frequently required automotive maintenance tools that can be augmented by modular packages that are tailorable to unit mission requirements and organizational design. SATS will eliminate obsolete tools, eliminate unneeded redundancy and inefficient tool proliferation, increase tool quality, improve transportability and improve tool accountability. The most significant advantage gained through use of SATS is its impact on the logistics footprint. This is done through standardization and modernization, which eliminates the need for four tactical wheeled vehicles and trailers.

Program Status. SATS begins LRIP in FY05 and full production in FY06 with FUE scheduled in FY06.

Family of Medium Tactical Vehicles (FMTV)

Description. The FMTV is built around a common chassis and drive train, featuring over 80 percent commonality of parts and components between models and weight classes. Operating worldwide in all weather and terrain conditions, the FMTV provides unit mobility, resupply and transportation at all organizational levels. It serves as the weapon systems platform for HIMARS and the support vehicle for Patriot. FMTV enhances crew survivability through the use of hardened cabs, three-point seat belts, central

tire inflation and machine gun ring-mount capability. It provides enhanced tactical mobility and is strategically deployable in C-5, C-17 and C-130 aircraft. FMTV reduces the Army's logistics footprint by providing commonality of parts and components, reducing maintenance downtime, and lowering operation and support costs that older trucks require.

Program Status. FMTV is in full production with over 23,148 trucks and 2,539 trailers fielded as of Oct 05. A competitive multi-year contract was awarded in Apr 03 to the current producer, Stewart and Stevenson, adding new models that include an expansible van and 10-ton dump truck. The HIMARS launcher chassis production build began in Oct 03. Current fielding supports modular transformation of infantry, heavy, Stryker, sustainment and fires brigade teams.

High Mobility Multipurpose Wheeled Vehicle (HMMWV)

Description. The HMMWV is a light, highly mobile, diesel-powered, four-wheel-drive vehicle that uses a common chassis. Using common components and kits, it can be configured as a troop carrier, armament carrier, shelter carrier, ambulance and TOW missile carrier. It is a tri-Service program that also provides vehicles that satisfy USMC, USN, USAF and foreign military sales (FMS) requirements. In Aug 05, a new variant of the HMMWV, the M1151 Enhanced Armament Carrier, will enter production and will replace the current M1114 UAH. The M1151 has UAH-like protection with a greater payload and incorporates operational lessons learned from OEF and OIF. An enhanced troop/cargo/shelter carrier M1152P1 is scheduled to enter production in Feb 06. The P1 designator reflects that armor has been installed on the vehicle. Additionally, the useful life of existing HMMWVs is being extended through an ongoing recapitalization program.

Program Status. There are 10,450 UAHs currently in U.S. Central Command's (USCENTCOM's) AOR supporting operational force protection requirements. Near-term production of HMMWVs (M1115P1/M1152P1/UAH) will support theater requirements as well as system interchange requirements for platforms such as Trojan SPIRIT, Tactical Operations Centers, Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T) and TUAV. Over 6,900 recapitalized HMMWVs are fielded in CONUS, including modularly converted units and SBCTs.

Heavy Expanded Mobility Tactical Truck (HEMTT)

Description. The HEMTT family of vehicles provides all-weather, rapidly deployable transport capabilities for resupply of combat vehicles and weapon systems. There are six basic configurations of the HEMTT series trucks: M977 cargo truck with Material Handling Crane (MHC), M978 2,500-gal

fuel tanker, M984 wrecker, M983 tractor, the M1120 HEMTT-LHS and M985 cargo truck with MHC. A self-recovery winch is also available on certain models. HEMTT-LHS provides the Soldier with an efficient and economical system with capabilities that cannot be replicated in the light and medium truck fleets. The HEMTT family of vehicles is designated as an FCS-complementary system and is a key enabler to achieving a distribution-based logistics system.

Program Status. All variants of the HEMTT are currently in production. The FY06-11 fielding schedule includes SBCTs 4-7, modular infantry and heavy BCTs, sustainment and fires brigades and OIF combat-loss replacements.

Palletized Load System (PLS)

Description. The PLS is composed of a prime mover truck with integral self-loading and unloading transport capability, a 16.5-ton payload trailer, and demountable cargo beds (flat racks). The vehicle can also be equipped with materiel-handling equipment and/or a winch. PLS is a key transportation component of the ammunition distribution system and provides long-range hauling, local hauling and unit resupply of ammunition. The PLS is capable of transporting multiple configurations of cargo utilizing a variety of flat racks. The M1077 and M1077A1 are sideless flat racks used to transport pallets of ammunition and other classes of supplies. The M1 flat rack carries identical classes of supplies. It is ISO/Convention for Safe Containers (CSC)-certified and is suitable for intermodal transport, including transport on container ships. Ammunition can be loaded on the M1 at depots, transported via container ship to theater, picked up by the PLS truck and carried forward without the use of any materiel-handling equipment. The PLS provides the Soldier with an efficient and economical system with capabilities similar to that of HEMTT-LHS, and is a major enabler in the Army's drive to achieve a distribution-based logistics system.

Program Status. The PLS is currently in production. The FY06-11 fielding schedule includes AC and RC engineer mission modules, APS and OIF combat-loss replacements.

Containerized Kitchen (CK)

Description. The CK integrates standard and commercial kitchen equipment into an expandable 8'x8'x20' ISO container. The CK has onboard refrigeration and uses the improved modern burner unit. The CK has a running water system and the interior is environmentally controlled. The CK can feed three meals a day to 800 Soldiers. Its efficiencies over the Mobile Kitchen Trailers (MKTs) include overall decreased footprint and manpower requirements.

Program Status. The CK has been in continuous production since FY02. Over 300 systems have been produced and fielded. Production continues at the rate of 4-6 per month through FY07.

Unit Water Pod System (Camel)

Description. The Camel system contains a 900-gal storage capacity, heater/chiller unit,

government-furnished M1095 (5-ton) medium tactical vehicle (MTV) trailer, and contractor-developed components mounted on or carried by the trailer. It will provide a maneuver company operating in a temperate environment 2+ days supply of water at a minimum sustaining consumption rate. It will have provisions for at least six retail dispensing points, and be fully capable of stand-alone operation. Camel will be capable of transporting both full and partial loads of water in accordance with approved OMS/MP standards by C-130 and larger aircraft, external-lift helicopter, and low-velocity, air-droppable means. Camel replaces the M107, M149 and M1112 series water trailers.

Program Status. The Camel ORD was approved in Mar 02, and the Camel entered testing summer 2005. Unit fielding is projected for 4QFY07.

Load Handling System (LHS) Compatible Water Tank Rack System (Hippo)

Description. The Hippo consists of a 2,000-gal, ISO-framed, potable water tank rack. The Hippo has an organic 125-GPM water pump, filling stand, 70-foot hose reel for both bulk suction and discharge and retail distribution. The Hippo will enhance water distribution by providing one system that enables both hardwall bulk water transportation and unit retail water support. It will allow for water transport directly from water purification points to supported maneuver elements and can be used as a water distribution point.

Program Status. Hippo will replace the majority of the Forward Area Water Point Supply System (FAWPSS). Fielding of the Hippo is projected for 4QFY07.

Load Handling System Modular Fuel Farm (LMFF)

Description. The LMFF provides the ability to rapidly establish a fuel distribution and storage capability at any location regardless of the availability of construction equipment or materiel handling equipment. The LMFF consists of 2,500-gal, ISO-framed, fuel tank racks and 400-GPM, ISO-framed, pumping modules. The pumping module will have a pump, engine, fuel/water separator, control panel, hoses, nozzles and other support equipment. The 35,000-gal capacity LMFF consists of 14 tank racks and two pumping modules. The 45,000-gal capacity LMFF consists of 18 tank racks and two pumping modules. The LMFF is compatible with the PLS and the HEMTT-LHS, allowing these systems to recover the tank racks and pumping modules, transport them to the new location, and emplace the system.

Program Status. ORD approved at the Department of the Army. Production verification test occurred in 4QFY04 and FUE in FY07. SBCTs will be the first units fielded the LMFF.

1,500-GPH Tactical Water Purification System (TWPS)

Description. The TWPS is a mobile water purification system capable of purifying, storing and dispensing water, meeting tri-Service field water quality standards for long-term consumption. Once emplaced, the system is intended to supply potable water, from a broad range of source waters, to ground, amphibious and airmobile units of the Army and

Marine Corps. It can also be used to provide potable water support to civilian agencies or host nations for emergencies, disaster relief, humanitarian efforts and peacekeeping missions. TWPS can purify up to 1,500 gallons of water per hour from any water source, including 60,000 total dissolved solids, salt water and NBC contaminated sources. The TWPS provides water support for division and brigade ground units operating in remote areas. It will be mounted on an LHS- or PLS-compatible flat rack and can be transported on a C-130 aircraft. Fielding may be delayed for units without LHS or PLS, pending availability of required LHS or PLS systems from production.

Program Status. TWPS began fielding Jun 05 in accordance with the Army Priority List.

Rapidly Installed Fluid Transfer System (RIFTS)

Description. RIFTS is a petroleum distribution system capable of rapidly deploying to distribute 875,000 gallons of fuel in a 24-hour day. Rapidly installed hose lines provide the ability to rapidly transfer fluid while decreasing traffic on main supply routes. RIFTS provides fuel distribution that is 10 times faster than the current Inland Petroleum Distribution System (IPDS). Procurement of RIFTS is conducted in two blocks. Block I includes development of the conduit (hoses), Employment Retrieval System (ERD) and auxiliary equipment. Block II includes the Automated Pump Stations (APS), Command and Control Module (C2M) with leak detection, computer-based planning aid and all auxiliary equipment.

Program Status. RIFTS Block I hose and reel fielding projected for late FY06 fielding. Block II pump stations and command modules fielding scheduled for early FY08.

Container/Material Handling Equipment (C/MHE)

Description. C/MHE includes all container and material handling equipment required to support the deployment of unit equipment and the distribution of sustainment items. The primary tactical C/MHE includes the Rough Terrain Container Handler (RTCH) and the All-Terrain Lifter Army System (ATLAS). The RTCH is the primary capability for handling 20- and 40-foot-long containers weighing up to 53,000 pounds. The RTCH is deployable by air, operates on all types of terrain, and is capable of stacking containers up to three high. The ATLAS has a 10,000-pound capacity and is capable of handling fully loaded 463L Air Force pallets, has a variable reach boom for removing items from 20-foot containers, and is capable of deploying by air.

Program Status. The RTCH program was terminated in FY04 with 342 of the 463 of the total AAO systems fielded. Production will restart in FY08. The initial contract production for ATLAS ended in FY05. A follow-on production contract for an upgraded ATLAS model is scheduled for FY07.

Maintenance Support Device (MSD)

Description. Formerly the Soldier Portable On-System Repair Tool (SPORT), MSD is a lightweight, rugged, compact, man-portable general-purpose automatic tester used to verify the operational status of systems, both electronic and automotive, and to isolate faulty components for immediate replacement. MSD is also used as a software uploader/verifier to restore or provide new software to weapon systems, and supports testing requirements of current and Future Combat Systems (FCS). The MSD and its predecessor, SPORT, are in wide use throughout the Army's ground

combat and CSS vehicle fleets as well as in the Army aviation fleet.

Program Status. MSD is currently being fielded. MSD V2 production begins Oct 05. A recent change in the basis of issue will provide the MSD to field-level maintainers at a ratio of 1:3 per maintainer occupational skill.

Man-Transportable Robotic System (MTRS)

Description. The MTRS provides a two-person, portable, lightweight robotic system capable of being helicopter transported, to give EOD Soldiers remote reconnaissance capability in situations where current robotics are too large to employ. Current operations have shown a need for smaller, portable robotic systems. Lack of this capability requires EOD Soldiers to physically approach explosive devices and manually perform reconnaissance and render safe procedures in confined spaces. Requirements for additional MTRS were initiated and validated in response to the increased threat and sophistication of potential threats.

Program Status. The new MTRS AAO of 461 incorporates additional requirements resulting from lessons learned in OIF and OEF. These requirements are included in the program plan through FY10.

Forward Repair System (FRS)

Description. The FRS is a high-mobility maintenance system designed to support forces in the battle area. FRS includes a crane and maintenance enclosure mounted on a component flatrack. The crane has a 5.5-ton lift capacity with a 14-foot (4.3 m) radius capable of removing and replacing major components, including full-up powerpacks (FUPPS) of all models of military vehicles.

The maintenance enclosure includes a 35 kW generator; air compressor; welding equipment including arc, acetylene and MIG; and industrial-quality air and electrical power tools ranging from 3/8- to 1-in drive with associated tool cabinets.

Program Status. FRS is in production and fielding. The units being fielded are BCTs undergoing modular conversion, SBCTs, as well as units in echelons above division.

Assured Mobility Capabilities

The engineer future force will be organized, manned, equipped and trained to be more strategically responsive, deployable, agile, versatile, lethal, survivable and sustainable across the full spectrum of military operations. The future engineer force structure will be comprised of modular, scalable and flexible organizations for prompt and sustained land operations capable of quickly transitioning between changes in task, purpose and directions.

Assured mobility capabilities support force application by maneuver forces as well as focused logistics by sustainment forces. A critical factor in sustaining operations is the ability of forces to move and to properly maneuver over the depth and breadth of the

battlefield while impeding, slowing or blocking our enemy's movement. Current operations in OEF and OIF highlight the enduring importance of systems that provide ground forces the capability of detecting, defeating and emplacing minefields and other obstacle effects, allowing unparalleled freedom of maneuver and force sustainment. This capability supports the commander's dominant maneuver capabilities that are critical to gaining the positional advantage needed to retain the initiative and enhance joint precision fires as well as ensuring sustainment force movement remains effective across the distributed battlefield environment.

Discussion of Key Assured Mobility Materiel Programs

AN/PSS-14 Handheld Standoff Mine Detection System (HSTAMIDS)

Description. The AN/PSS-14 is a handheld mine detector capable of detecting metallic and nonmetallic anti-tank (AT) and anti-personnel (AP) mines. It combines ground penetrating radar (GPR) and an improved metal detector to provide a high probability of detection and reduce false alarm rates. The system requires 40 hours of operator training and frequent refresher training due to the erosion of skills over time. The AN/PSS-14 will be fielded with a training set that includes a Sweep Monitoring System (SMS) and training targets.

Program Status. AN/PSS-14 entered low-rate production in FY03 and achieved Milestone C in 1QFY04. The program is projected to receive full material release in Jun 06. Available systems are fielded to designated engineer units currently deployed or soon to deploy in support of OEF and OIF.

Ground Standoff Minefield Detection System (GSTAMIDS)

Description. GSTAMIDS FCS is a time-phased developmental program designed to provide the warfighter a capability to execute on-route countermine missions for the FCS. GSTAMIDS FCS will be employed on an overpass-capable countermine MULE variant UGV. The system will employ future improvements that will automatically detect, mark and neutralize all metallic and nonmetallic AT mines.

Program Status. GSTAMIDS FCS will begin engineering and manufacturing development with project Milestone C in FY12.

Airborne Surveillance, Target Acquisition, and Minefield Detection System (ASTAMIDS)

Description. ASTAMIDS is a complementary program under the FCS program. ASTAMIDS is an ISR sensor payload for the FCS Class IV Fire Scout UAV. ASTAMIDS consists of a multi-mission/multi-mode sensor package that provides both day/night minefield and obstacle detection for assured mobility and RSTA/LD capabilities. The ASTAMIDS pay-

load provides high-quality, high-resolution digital imagery using fast, step-stare technology. Specific sensor technologies are a multispectral imager (MSI) using three visible and one near-IR spectral band, a mid-wave IR thermal imager (for a total of five geo-registered bands simultaneously), a color zoom camera, laser illuminator (to facilitate night or low-light operations), eye-safe laser range finder, laser designator, inertial measurement unit and a highly stabilized gimbal. Digital imagery is processed to automatically detect minefields and obstacles and to cue operators. In the RSTA/LD mode, the system can detect, recognize, identify and track combat targets and also laser designate these targets for munitions effects.

Program Status. The ASTAMIDS program is currently in SDD. ASTAMIDS is being managed by the Project Manager for Close Combat Systems (PM-CCS) in close cooperation with the PM-Robotic and Unmanned Systems (PM-RUS) and the PM-FCS (BCT) ISR. Contractor functional and qualification testing is planned for FY07 followed by contractor developmental test in FY08. Prototype deliveries of seven systems are synchronized with the needs of the FCS integration and testing efforts using three spiral builds during FY07 (two each), FY08 (two each), and FY09 (three each). A Milestone C/LRIP decision is planned for 2QFY09.

Route Clearance Vehicles

Description. Route clearance vehicles are a family of mine-protected vehicles employed by combat engineers in route clearance operations. The three vehicles are the Buffalo Mine Protected Clearance Vehicle (MPCV), the Interim Vehicle Mounted Mine Detector (IVMMD) and the RG-31 Medium Mine Protected Vehicle (MMPV). The vehicles are employed within a route-clearance team. The RG-31s provide local security to the teams and serve as command and control vehicles. The IVMMDs are used to detect mines or IED hazards, and the Buffaloes can investigate suspicious items with their hydraulic articulated arms. All three vehicles provide protection to the crew from explosive blasts and armor-piercing, small-arms fire. The Buffaloes also have RPG protection. Each vehicle is designed for rapid repair after an explosive encounter. All three vehicles are commercial items that have proven effective in wartime operations.

Program Status. The route clearance vehicles have been fielded in support of OEF and OIF. All three have AROC-approved capability production documents (CPDs) and the IVMMD CPD is pending approval. Milestone C for each is expected in FY07 pending funding and completion of full material release actions.

Intelligent Munitions System (IMS)

Description. IMS, an unattended munition within the FCS family of systems, is not only one of the first systems to be integrated into the FCS common operating environment (COE), it is also one of the first scheduled for fielding as part of Spin Out 1. IMS is a key capability in providing assured mobility by giving force commanders the freedom to move and maneuver where and when they want without regard to terrain, weather or other conditions.

IMS is a system of munitions, sensors and communication devices that can implement obstacle intent and attack targets, either autonomously or with man-in-the-loop control. When fielded, it will detect and neutralize enemy forces, cover gaps in dangerous terrain to prevent enemy maneuver, provide economy of force missions, protect fixed facilities and

secure flanks, allow for movement of friendly forces and provide for immediate selective engagement. The fully networked munition allows for a scalable response and provides ultimate flexibility for hand or remote emplacement on the dynamic battlefield.

IMS's ability to detect, classify, identify, track and engage selected targets fits into the FCS concept of providing our Soldiers with a system of systems that uses advanced communications and technologies to integrate the Soldier with families of manned and unmanned platforms and sensors.

Program Status. IMS is currently in the concept and technology development phase and projected to reach Milestone C in 1QFY09 and IOC in FY10.

Spider (Anti-personnel Land Mine Alternative (APL-A))

Description. The Spider APL-A is a compact, lightweight, hand-emplaced, AP munitions system designed to replace the M16 and M14 AP mines for Army and Marine use. The Spider is comprised of three main assemblies: a remote control system, a repeater and up to 84 munition control units (MCUs). Each MCU holds up to six miniature grenade launchers and is embedded with a GPS to provide accurate location to field components. The remote control unit (RCU) allows for man-in-the-loop, off-on-off and self-destruct capabilities via remote control. Additionally, Spider includes a munition adapter module that will initiate electric blasting caps and shock tubes to fire other lethal (Claymore, SLAM) and nonlethal munitions.

Program Status. Spider is currently in the SDD phase and projected to reach Milestone C in 2QFY06. LRIP will begin in FY06 and FRP in FY07. FUE is scheduled for FY07 and IOC in FY08.

Improved Ribbon Bridge (IRB)

Description. The IRB, fielded to multi-role bridge companies (MRBC), provides a dependable roadway or raft capable of crossing assault vehicles or tactical vehicles over nonfordable wet gaps. The capability of this system is military load classification (MLC) 100 wheeled and MLC 80 tracked. The bridge sections are transported by Common Bridge Transporters (CBTs). The CBT is a modified HEMTT LHS providing enhanced, multipurpose transportation capabilities. Each MRBC will have the capability of emplacing 210 meters of bridging. The system is external airlift transportable by CH-47 and CH-53 helicopters. The bridge bays are air transportable, partially disassembled, in C-130s. The IRB has enhanced capabilities of operation in swifter water speeds up to 10.3 feet per second and over 2.1 meter banks. It provides a 4.5 meter wide roadway, improved

hydrostatic capabilities and various other design improvements.

Program Status. A five-year, multi-year contract awarded in FY00 provided for 13 of 20 MRBCs with the IRB. Eleven units were fielded through FY05, with the remaining two units being fielded with the IRB in FY06.

Rapidly Emplaced Bridge System (REBS)

Description. REBS is a wheeled, vehicle-launched, bridge system providing a four-meter roadway width, MLC 30 tracked (T) and wheeled (W) normal and MLC 40(T)(W) gap crossing capability up to 13 meters. Transported on a CBT, each SBCT will have four REBS. This system is transportable by C-130 aircraft. The assembled bridge is externally sling lift-transportable by CH-47 and CH-53 helicopters. Two Soldiers can deploy the REBS in the daytime, within 10 minutes, with little or no site preparation.

Program Status. A five-year, multi-year contract was awarded in FY01 for 18 systems with an option for 22 systems. FUE is scheduled for 2QFY06.

Dry Support Bridge (DSB)

Description. DSB is a modular bridge assigned to the MRBC that can span a 40-meter gap and can be emplaced in 90 minutes by eight Soldiers. It significantly reduces the manpower and time needed to construct a tactical bridge as compared to current systems and possesses greater load capability. One bridge set provides either a 40-meter bridge or two 20-meter bridges. The bridge will cross MLC 96W/70T traffic and will allow the crossing of a heavy-equipment transporter carrying a combat-loaded M1 tank. DSB consists of a launcher permanently mounted on a PLS, three CBTs (for transport only, separately issued to unit) and four PLS trailers that carry the modular components as palletized loads. A bridge set consists of six M1077 flat-rack loads of bridge components, one M1077 flat-rack load of launch beams and a launcher vehicle. To transport and launch one complete DSB system requires the launcher, three CBTs and four PLS trailers.

Program Status. A five-year, multi-year production contract for 27 systems (base quantity) was awarded on 2 Sep 00. The total procured DSB systems for this contract was 32. The second five-year production contract was awarded on 4 Feb 05 for 26 systems with 100 percent call-up options. The DSB system is fully funded to procure the APO of 88 systems. Fielding initiated in FY03 will continue at approximately two MRBCs per year for systems funded.

Tactical Wheeled Vehicle Force Protection

As an important part of the Army's responsibility to sustain the Joint Force with equipment and directly related to the critical requirement to provide protection against an adversary's effect on that force, the Army has initiated an aggressive approach to protect its tactical wheeled vehicles. The highest priority is to provide such protection to our forces involved in ongoing operations in Iraq and Afghanistan, though integrated efforts will be both short and long term in their impact. To quickly address operational needs for armoring, the Army has established an armoring task force with the purpose of identifying requirements, developing an integrated strategy, determining ways to accelerate production and installation of armor solutions, determining funding solutions and identifying a longer-term strategy.

The Army has two distinct levels of armor protection that are being provided to tactical wheeled vehicles. The first, level I, refers to fully integrated armor installed during production and retrofit. The second, level II, includes officially approved and centrally manufactured add-on armor kits that can be installed on vehicles anywhere. Concurrently, the Army is assessing and testing other technological improvements to ensure that all tactical wheeled vehicles involved in operational missions are equipped with the best protection available.

Considerable effort as well as significant progress have been made since late 2003, when requirements for armored tactical wheeled vehicles were a few hundred. Under the auspices of the armoring task force, the pace of armoring has been accelerated in response to the rapidly changing operational requirements. As a result, as of Nov 05 over 35,601 vehicles had level I or level II armor installed, meeting theater requirements for armored tactical wheeled vehicles. Reaching this milestone has allowed the Army to transition to its long-term armoring strategy in which all new or rebuilt tactical wheeled vehicles will have an armor package integrated into them.

The Army has developed a strategy for addressing and funding these urgent requirements in the near term and sustaining it over the longer term. A summary of the key elements of the strategy, the current requirements and progress to date are shown in Figure D-9.

In addition to the essential materiel solutions to these operational requirements today, the Army is also fully involved in pursuing non-

Key elements of the tactical wheeled vehicle force protection strategy:

- Manage the apportionment of available up-armoring assets (kits, steel, ballistic glass and cabs) to ensure available assets are used in accordance with the supported commander's priorities.
- Strengthen manufacturing programs to ensure that each month we produce the maximum number of kits.
- Establish a forum (the Armoring Task Force) that links the supported commander (USARCENT), the force providers (FORSCOM, USAREUR, USARPAC), the materiel requirements and solution community (ASA (ALT), AMC, TRADOC) and HQDA to ensure that the Army plans and executes a synchronized program.
- Communicate the tactical wheeled vehicle (TWV) up-armoring program so that senior leaders across the Army have common visibility of the TWV up-armoring program.
- Priorities are determined by ground commanders based on mission and risk regardless of component.
- Develop a long-term, sustainable armoring strategy that incorporates operational lessons learned and provides armoring capability for all tactical wheeled vehicles.

Total Requirement:

- 9,727 for up-armored HMMWVs and 13,872 add-on armor kits for other HMMWVs.
- 9,497 kits for medium and heavy tactical vehicles.
- All level I and level II armored vehicles will remain in theater as stay-behind equipment.

Progress to date:

- Approximately 35,000 vehicles with level I or II armor in 24 months.
- Up-armored HMMWV (UAH) requirement met in Jul 05. UAH production will continue to flow into theater to upgrade level II armored vehicles.
- Production for validated kit requirements completed in Sep 05.
- Installation of all vehicle kits completed in Dec 05.

Figure D-9. Tactical Wheeled Vehicle Force Protection

materiel measures that can directly improve the sustainment and protection of the Joint Force. These steps include the work of the JIEDD task force, which is working across the interagency and international spectrum on materiel and nonmateriel solutions to defeat this threat. Tangible results include effective countermeasures, fielding systems that increase detection and enhance detonation, and training solutions that increase awareness and incorporate lessons learned. In the end, this is and will remain a high-priority task for the Army and one that is fully integrated into equipping and operational requirements and responses.

Focused Logistics (FL) Summary

Sustainment of forces, in any environment, is critical to successful mission accomplishment. This appendix focused on the systems critical to the logistics triad: unity of effort, domain-wide visibility, and rapid and precise response. More important than materiel programs, however, is the entire redesign of the Army's force to a future combat force design and the accompanying logistics transformation effort. This new design will greatly enhance the Army's ability to rapidly deploy and successfully carry out missions across the full spectrum of operations.

As the Army continues to transform itself into a future force design, the specific requirements needed to enhance mobility and sustainability will become clearer. The current plan funds those programs with proven potential for the future while enhancing the capabilities and readiness of the current modular force.

Appendix 4: Battlespace Awareness (BA)

Battlespace awareness is the ability to sense and understand the operational environment with its mix of friendly "blue" forces, enemy "red" forces and nonaligned actors/noncombatants, as well as the "white" aspects of terrain and weather aspects that can aid or hinder friendly force operations. BA relies on the continuous collection, processing, fusion, analysis and modeling of data from a large mix of highly responsive sensors (e.g., unattended, human, intrusive and remote) to provide the commander and his force elements with near real-time, collaborated, tailored, actionable battlespace information. Enhancing BA capabilities provides the commander with more confidence in his understanding of the operational environment and the associated operational risks. This translates to better and faster decision making in the planning and execution of operations. BA is the key to increasing the reach, persistence and agility of our military capabilities while increasing the range of military options available.

Observation and information collection occurs throughout the battlespace from traditional ISR sensors and collectors, such as satellite constellations, airborne and proximate sensors, HUMINT, sensors specifically designed to support weapons systems (e.g., Firefinder), to nontraditional sources, such as commercial and open sources. Each of these entities represents a node in the BA grid. Nodes provide data and information to the grid and draw information as required from the grid. Nodes range from every Soldier in the field as a potential sensor to the future space-based radar, as a primary provider of an extremely fine-grained depiction of the battlespace. Through these nodes, intelligence on current and future activities in the operational envi-

ronment and updated baseline environmental information is collected, fused, analyzed and presented to create a comprehensive battlespace picture. Baseline environmental data includes information on the weather, cloud cover, vertical temperature profile, humidity, wind, precipitation, soil moisture, ice cover, sea ice, electron density profile, vegetation, terrain, infrastructure, resources (e.g., water, energy sources, building materials), transient infrared sources, second-order effects such as trafficability and sensor field of view; and significant social aspects such as the cultural, religious, economic, political and security situation. By utilizing the collection capability of all possible nodes, the reach, robustness and persistence of the entire sensing network are greatly enhanced to create a pervasive, detailed understanding of the battlespace.

One significant area of joint development that supports enhanced BA capabilities is space. Space is the backbone for the national and military ISR architecture and the domain of choice for commercial broad-area sensing enterprises with military utility. Space-based communications provide reach and NLOS connectivity while space-based ISR and commercial imagery platforms substantially enhance strategic, operational and tactical intelligence collection, processing and dissemination. Soldiers in OEF and OIF use space-based systems to communicate, navigate, target, find and fix the enemy, anticipate weather, receive missile warning, avoid fratricide and much more.

The Tactical Exploitation System (TES) embedded in the corps and division force structures is providing vital space-based and airborne imagery, signals intelligence (SIGINT), BFT and communications reach to and from deployed units for OIF. The Army is currently developing the Distributed Common Ground System-Army (DCGS-A), as part of the DOD DCGS family of systems concept, to incorporate ISR data and information from all sensors and analytic centers, regardless of the source. It will provide the red and gray weather and environment portions of the COP to commanders and decision makers down to the individual Soldier.

The shared visibility between operations and intelligence provides the venue to predict the effects of threat actions and changes in the operational environment as well as assess potential courses of actions against the threat operations. Decision making and forecasting tools will continuously evaluate changes in environmental data to identify potential impacts on ongoing operations and alert the relevant decision authority to the perturbation. Predictive analysis and modeling will allow potential courses of action to be evaluated with a better understanding of the potential impacts on the operational environment. The simultaneous current and forecasted depictions of the battlespace, coupled with the responsiveness of sensors, will allow commanders to quickly evaluate sensor mission utility and retask multiple sensors to react to emerging operational situations.

Current and projected operational information will be continuously fused by robust knowledge management systems and disseminated to all levels of users through adaptable, flexible, networked communications systems. Within this “producer interactive network,” force elements will subscribe to products or data (including archival data). Software agents will broker data and products, posting some unprocessed information. In this manner, all joint, allied and coalition warfighters will have access to common data, within security access and transport layer constraints, to construct their own tailorable, relevant operational pictures. Access to the combat

support agencies' data is key to achieving dominant battlespace awareness.

Discussion of Key Battlespace Awareness Materiel Programs

Distributed Common Ground System-Army (DCGS-A)

Description. DCGS-A is a family of systems and an integral component of the Army's ISR networking strategy. DCGS-A will migrate capabilities of disparate ISR systems into a joint, common, interoperable multi-intelligence architecture to improve the ground commander's ability to act faster than the enemy's decision cycle, or ability to react. DCGS-A software/hardware used throughout the Army and joint environments will task, post, process and use Army, joint, national, interagency and multinational ISR sensor data and information in support of future Army, joint task force and multinational operations. DCGS-A is an FCS complementary system, providing the threat, weather and terrain data to the BCT through its embedded software capabilities. Fixed and mobile DCGS-A transparently operates with embedded DCGS-A software applications within the FCS, operating in a secure, collaborative, networked environment. DCGS-A provides real-time, sensor-to-commander, sensor-to-shooter, and sensor-to-analyst information tailored to mission, task and purpose of the recipient. DCGS-A also provides the ground station for the Aerial Common Sensor (ACS) and UAVs. It is part of the larger DOD DCGS family of systems and will meet the requirements of the DCGS integrated backbone, net-centric enterprise services, and system of systems COE.

Program Status. The DCGS-A program will employ an evolutionary acquisition strategy, providing incremental milestone decisions throughout the SDD phase based on validated/approved requirements for DCGS-A capabilities and the DCGS-A capability needs inherent in other future force programs such as the ACS and the FCS. Milestone B decision is scheduled for 2QFY06 to field an objective capability by 2010. The 525th MI Brigade, XVIII Airborne Corps, demonstrated a DCGS-A capability in FY04. The DCGS-A program demonstrated a mobile prototype for Joint Expeditionary Force Experiment (JEFX) 05 and FCS 1.1 and will provide limited enhanced capabilities to OIF by FY06 with the transition of Joint Intelligence Operations Capability-Iraq (JIOC-I) into the program of record.

All Source Analysis System (ASAS)

Description. ASAS is the Army's primary intelligence fusion program, found at all Army echelons from battalion to field army. It automates the planning and management of intelligence, counterintelligence and electronic warfare operations; intelligence collection management; the processing and analysis of intelligence and combat information; and the dissemination of intelligence and combat information products to tactical and operational commanders. ASAS provides an automated interface to the Army Battle Command System (ABCS) and the Joint Global Command and Control System. These interfaces provide battlefield commanders with enhanced

situational awareness and timely intelligence on enemy force deployments, capabilities and potential courses of action, as part of the COP. In turn, the Army intelligence community receives current information on blue force locations, activities and plans. As the Army begins to fuse intelligence and operations, ASAS provides the initial automated intelligence capabilities required for this enhanced command, control and intelligence support. These capabilities will be merged into the DCGS-A program.

Program Status. With a favorable Milestone C decision in Jun 05, ASAS Block II is in FRP. Three ASAS Block II analysis and control elements (ACE) will begin operating in Iraq in FY06 in support of a corps and two divisions. Currently, the Army is fielding Block II ASAS Light intelligence staff support systems and BCT ASAS analysis and control team elements to the force.

Aerial Common Sensor (ACS)

Description. ACS is the Army-led, joint airborne ISR system that meets the Army and Navy's requirements for a worldwide, self-deployable asset that can begin operations immediately upon arrival into theater, in front of, or alongside the Joint Force. ACS will support the theater down to the BCT commander and will merge and improve the capabilities of Guardrail Common Sensor and Airborne Reconnaissance-Low into a single multifunction platform to provide the requisite networked situational awareness and joint network-centric and deep-strike precision targeting for the future Joint Force commander. ACS provides multi-intelligence precision targeting and distributed, wide-area, persistent surveillance throughout the breadth of the joint operations area battlespace. Using the DCGS for the ground station component, ACS, via robust sensor-to-shooter and reach links, will provide commanders at every echelon with the tailored, multisensor intelligence required for dominant maneuver, precision engagement, information superiority and decision dominance throughout a nonlinear framework and noncontiguous battlespace. Onboard battle command and communications relay packages with the ISR payload will ensure uninterrupted, joint integrated C4ISR support to the maneuver commander across the spectrum of conflict and through all phases of the battle. ACS's modular, open architecture, with onboard SIGINT, imagery intelligence (IMINT) and measurement and signature intelligence (MASINT) subsystems, fuses the EO, IR, synthetic aperture radar (SAR), moving target indicator (MTI), multi- and hyperspectral imagery sensors to provide a single multi-INT view of the threat. The ACS teams off-board analysts with onboard battle command, communications relay and intelligence functions for a robust multipurpose system that enables the commander to see first, understand first, and finish decisively.

Program Status. The Army terminated the ACS contract with Lockheed Martin for convenience on 12 Jan 06. The contract, awarded 2 Aug 04 as a SDD contract, has been in a Stop-Work status since September 14 Sep 05, when the Army gave Lockheed 60 days to propose alternative options to resolve ongoing issues with devolving program requirements. It is important to note that the Army did not terminate the ACS program, only the contract. ACS capabilities remain valid requirements for both the Army and the Navy. The ACS system will provide an order of magnitude improvement over the DOD current fleet of ISR aircraft. In the meantime, the OSD will begin a 6-month joint ISR study in Jan 06 aimed at determining the right mix of manned and unmanned systems across all three Services that would meet the DOD's future airborne ISR requirements. The Army

will use the results of this study to further define its own requirements and acquisition strategy for ACS, and work towards re-competing and restarting the ACS development contract in 2009.

Advanced Field Artillery Tactical Data System (AFATDS)

Description. AFATDS is the primary Army fire support system that provides tactical and technical fire solutions, including weapon-target pairing, mission planning and execution. AFATDS provides the fires COP at each echelon, as well as the technical fire control providing ballistic solutions for cannons and rockets. AFATDS is a true joint system: fully fielded by the USMC, on USN ships, and interoperating with the USAF via the Air Force's Theater Battle Management Core System. As such, AFATDS provides a full range of situational awareness, battle management, planning, and target analysis and engagement capabilities for the employment of all supporting arms and assets.

AFATDS operates from platoon to echelons above corps, providing a tactical and operational picture of the battlefield to meet the commander's top seven priorities. AFATDS provides the friendly picture of the location and status of all friendly fire support assets; the enemy situation, including tracking all enemy target locations; and a running fire support logistics status (e.g., propellants, projectiles, fuzes). AFATDS provides graphic control measures, maintaining a complete database of fire support geometries and fire support coordinating measures (FSCMs), and performing appropriate levels of coordination as required. The AFATDS target database and weapon status-tracking feed the commander's situation report. AFATDS management of the FSCM and capability overlays ensure optimal weapon target pairing and strategic attack analysis.

Program Status. AFATDS is currently fielded to 11 USN ships, 100 percent of USMC units, 100 percent of the active Army units and 75 percent of the ARNG units. Version 6.3.2 software is currently in use and is in the process of replacement by version 6.4 in 2005. Recently identified by OSD as completely interoperable with net-centric requirements (as they are currently identified), future developmental improvements will focus on increased joint interoperability, and new weapons and munitions functionality.

Long-Range Advanced Scout Surveillance System (LRAS3)

Description. LRAS3 provides unmatched long-range target acquisition and far target location capabilities to armor and infantry

scouts. It consists of horizontal technology integration (HTI) second-generation FLIR (cooled infrared), long-range optics, laser range finder, GPS interferometer, day video camera, and a link to FBCB2 for automated handoff of target locations. As the premier ground scout sensor system, it enables the scout and cavalry units to conduct RSTA missions while remaining outside threat acquisition and engagement ranges during all-weather and dirty battlefield conditions (i.e., fog, dust, smoke and sand). LRAS3 is also being integrated with a laser designator module (LDM) as the Fire Support Sensor System (FS3) for the Stryker Fire Support Vehicles and the Knight Fire Support Vehicles.

Program Status. LRAS3 is in FRP, and LRAS3 procurement is funded for both AC and RC heavy and infantry BCTs. LRAS3 is being fielded to HMMWV-mounted scouts and is being integrated into the Stryker Reconnaissance Vehicles.

Tactical Exploitation System (TES)

Description. The TES family of systems is the Army's Tactical Exploitation of National Capabilities (TENCAP) system that receives, processes, exploits and disseminates intelligence data from direct downlinks and other fixed and mobile ground stations. The TES family of systems is a key part of the emerging DCGS architecture with TES variants in Army, USN, USMC, limited USAF units, and selected national and joint agencies/headquarters. TES software and middleware are the basis for DCGS-A fixed systems. The TES program combines the intelligence functions of four previously stovepiped ISR collection systems into an integrated downsized, open, scalable, modular and network-centric architecture with all elements fully transportable by C-130 aircraft. TES tasks, receives, processes and exploits electronic intelligence (ELINT), communications intelligence (COMINT) externals, IMINT and MTI data from satellites, Air Force and Navy theater aircraft/sensors, and selected tactical aircraft/sensors from Marine Corps and Navy. TES generates timely information, intelligence and targeting data. TES also is capable of limited MASINT processing and analysis. TES receives space-based binary file transfer (BFT) data and provides it to the GCCS Army. TES has a direct digital/network interface with the AFATDS, Automated Deep Operations Coordination System (ADOCS) and the JIOC-I. TES performs preprocessor, processor and analytical functions for the ASAS, Common Ground Station (CGS), JIOC-I, and Digital Topographic Support System (DTSS). Designed for split-base operations, TES supports joint, combined and early-entry operations.

Program Status. TES-Main and TES-Forward systems have been fielded to 18th Airborne Corps, V Corps, III Corps and 513th MI Brigade. As the Army transforms to its new structure, the TES-Main will support the theater as a component of the theater intelligence brigade (TIB) and the TES-Forward will be organic in both the corps and selected TIBs. Distributive-TES (DTES division-level assets) have been fielded to all AC divisions. These will become organic to the division. Three more DTES will be produced and fielded over FY06-07 for the corps (three-star tactical command posts). The TES-Forward (minus) system will be fielded to the 501st MI Brigade and to I Corps in FY06. Twenty-one TES-Light systems will be fielded to SOF, ACR, Republic of Korea Army and selected BCT elements in FY05-06. The JIOC-I has been fielded to Multinational Forces-Iraq command center. The TES Remote Interface System (RIS) that provides expanded direct database access between TES/DTES and ASAS has been fielded to VXIII Airborne Corps 4th ID and as stay-behind equipment in

support of Multinational Corps-Iraq (MNC-I). A number of TES systems continue to be deployed in OEF and OIF and judged in after-action reports as being very supportive of high operating tempo (OPTEMPO), ISR and dynamic targeting demands. TES systems were/are the primary source of theater and national near real-time imagery and SIGINT data for MNC-I and divisions. TES software and middleware are the bases for the DCGS-A fixed that have been fielded to 513th (3rd Army) and 501st (8th Army) MI Brigades. By Jan 07, the DCGS-A fixed will be fielded to the 500th (USARPAC) and 66th MI Brigades. TES systems will be in the force structure until the objective DCGS-A system is fully fielded, sometime after 2015.

Integrated Meteorological System (IMETS)

Description. IMETS supports the current force, including aviation, SOF and SBCTs, and the transformation to the modular design. It will migrate through spiral development to DCGS-A in the future modular force in 2008. IMETS ingests local aviation surface weather and artillery upper observations, weather satellite data, and observations from unattended, automated observing equipment. IMETS receives transmissions of centrally prepared USAF forecast products. IMETS uses Army weather effects software linked to current and forecast data to determine weather effects on friendly and enemy personnel, equipment and operations. IMETS provides tailored weather forecasts and space weather impacts for planners and operations, including chemical defense. Weather effects are linked to users within each supported tactical operations center (TOC) by direct machine-to-machine interface, enabling users to interact with the database to determine details on adverse weather effects. IMETS is the gateway and communications interface to support major subordinate commands and warfighters without direct weather support.

Program Status. IMETS is primarily an NDI that will have three distinct configurations: vehicle-mounted, command post (CP) and light. The vehicle-mounted and light configurations are in FRP. The IMETS objective software applications underwent testing in 4QFY04, with fielding initiated in FY05. This is the hardware and software baseline that will support ABCS 6.4 and provide the bridge until DCGS-A and FCS integrate the capabilities.

Trojan Special Purpose Integrated Remote Intelligence Terminal (SPIRIT)

Description. Trojan SPIRIT provides assured Top Secret/Special Compartmented Information (TS/SCI) satellite communications to deployed warfighters from brigade to echelons above corps. It provides critical intelligence reach to strategic, operational

and tactical Army and joint formations. Trojan SPIRIT was born as a quick-reaction capability during Operations Desert Shield/Storm, as commanders needed a way to receive time-sensitive Top Secret and Secret imagery and intelligence data at high data rates. From those beginnings, the system became a program of record in 1993, designated the Trojan SPIRIT II, with initial fieldings to separate brigade/ACR, division, corps, and EAC units. Trojan SPIRIT II fielding ended in 1998, but the advent of the Stryker brigade brought the system back to life with a new variant, the Trojan SPIRIT Lightweight Integrated Telecommunications Equipment (Trojan SPIRIT LITE). There are three versions of the Trojan SPIRIT LITE: a transit case version (V1), in use by Special Operational Forces, and two wheeled versions (V2/V3) used at the BCT through EAC levels. All feature a 2.4 meter satellite dish which provides up to T-1 (1.544 mbps) throughput using the C or Ku frequency bands. Each Stryker brigade receives two V2 and one V3 Trojan SPIRIT LITE. Under the modular force design, each BCT receives one V3 system, a significant increase in Trojan SPIRIT density across the force. The new divisional headquarters retains the two Trojan SPIRIT II systems formerly in the division MI battalion, and fielding of a third system (a LITE V3) is under consideration.

Program Status. The program is beyond Milestone III. The Trojan LITE V2 and V3 have been in production since FY00. LITE V2 production will cease in FY07 after fielding of Stryker Brigade 7. LITE V3 production and fielding will continue through FY11 as the Army resources all modular force brigades and National Guard Division Headquarters with the system. The Trojan SPIRIT ORD was revised and AROC approved in Dec 03, and is in the final stages of joint staffing and approval. Trojan SPIRIT is an interim solution for assured TS/SCI satellite communications until the fielding of Warfighter Information Network–Tactical (WIN-T).

Prophet

Description. Prophet provides a near real-time view of the BCT/ACR/SBCT area of operations through the use of SIGINT sensors, and includes the capability to detect, identify and electronically attack select enemy emitters. It is a dedicated, dynamically retaskable asset, allowing the tactical commander to visually depict and understand his battlespace, now and in the future. It provides expanded frequency and area coverage for situational development and awareness, as well as force protection operations. Prophet can operate on-the-move, mounted on a HMMWV, or stationary in a mounted or dismounted configuration. It has an open architecture that supports programmed improvements and mission-specific technical insertion components. This makes Prophet relevant throughout the entire spectrum of operations and able to exploit critical high-value emitters. Prophet has been an invaluable and critical collection asset in the global war on terrorism.

Program Status. Prophet Block I began fielding in Nov 02 and was fielded to all deploying forces in support of the global war on terrorism. Prophet Block II is in LRIP, and the first systems will be available for fielding in late FY06. In response to the global war on terrorism, the Army will also begin fielding an

interim Block III capability in late FY06. The production version of Block III continues in SDD and is expected to undergo IOT&E in FY07 with FUE in FY08.

Tactical Unmanned Aerial Vehicle (TUAV) Shadow 200

Description. The RQ-7A Shadow 200 TUAV provides the maneuver commander with a near real-time, highly accurate, sustainable capability for over-the-horizon RSTA, and battle damage assessment (BDA). Each Shadow 200 TUAV system consists of four Shadow 200 air vehicles, six HMMWVs, two ground control stations (GCS), one portable GCS and four remote video terminals that can provide near real-time video to commanders on the ground. The Shadow 200 TUAV has an onboard EO/IR sensor payload. Future planned improvements include a laser designator, a tactical common datalink for secure, jam-resistant data forwarding, and an upgrade of the engine to gain reliability improvements. The threshold range is 50 km with an objective range of 200 km and an on-station endurance of four hours. The threshold payload is 60 pounds with an objective capacity of 100 pounds. OPTEMPO requires a threshold of 12 hours per 24-hour period and an objective of 18 hours per 24-hour period.

Program Status. TUAV IOT&E was completed in May 02 followed by a Milestone III FRP decision in Sep 02. FUE was 3/2 IN SBCT in May 02 and IOC was achieved in Oct 02. Production and fielding continues under the FY07-11 program plan. The TUAV is currently supporting the global war on terrorism. The TUAV program was revalidated by JROC in 2004.

Counterintelligence/Human Intelligence Information Management System (CHIMS)

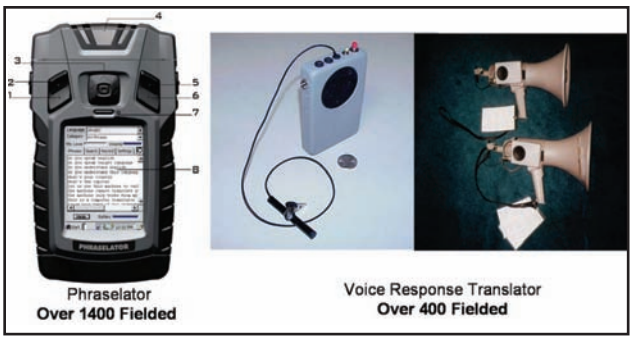
Description. CHIMS provides counterintelligence (CI) investigator/interrogator and HUMINT agents/Soldiers with automation support for the collection, analysis, production and dissemination of HUMINT and CI data/information. CHIMS provides the Army commanders at all echelons down to the BCT and Joint Interrogation and Detection Centers (JDIC) with automation for the collection management, analysis and production of CI and HUMINT data into actionable

intelligence. It is designed to support the commander's ability to anticipate and react to a wide range of force protection threats and situations. The system is message and reporting interoperable with the Army ASAS at the tactical level with planned enhancements to be interoperable with the Portico program and the Defense Counterintelligence Information System (DCIIS) at the strategic level. The Biometric Automated Tool (BAT) system that has evolved out of OIF and OEF has been integrated into the CHIMS software to capture and store fingerprints, facial recognition and

iris scan algorithms for HUMINT data fusion and correlation of detainee, employee and refugee tracking during stability and support operations (SASO). CHIMS also provides the capability of document exploitation (DOCEX) for the screening/triage in over 40 languages with planned Arabic-to-English audio and visual look-up enhancements.

Program Status. CHIMS is a spiral development effort with Version 4.2 currently in FRP with all procurement in direct support of OEF and OIF. The software in the SDD phase is planned for integration into the DCGS-A Spiral Four initiative and should start production in FY06.

Sequoyah Foreign Language Translation System (S-FLTS)



Description. Military, contract and host nation linguists provide a critical capability that is unavailable in sufficient numbers to satisfy the language translation needs of the Army or the joint operational environment. The S-FLTS addresses this capability gap by enabling non-linguists with two-way automated speech and text cross-lingual communication capabilities on demand. S-FLTS will provide commanders an organic capability to rapidly perform two-way speech and text cross-lingual operations across all echelons and in all environments where linguist support is minimal or unavailable. S-FLTS' interoperable design will enable it to be embedded on diverse platforms throughout the joint community to include the BCS, GSS, FCS and the DCGS. S-FLTS cross-lingual capabilities will be available via a browser, and as modules for systems that are not always linked to the network (mobile and handheld computers).

Program Status. The Army has been designated as the lead Service for S-FLTS with JROC interest designation. The S-FLTS ICD received JROC approval on 13 Jun 05. Joint Forces Command (JFCOM), in response to an Urgent Need Statement provided by the Multi-National Security Transition Command-Iraq (MNSTC-I) is developing the initial speech to speech (IS2S) capability by leveraging off DARPA's tactical translation effort. The First Spiral IS2S prototypes are currently being assessed for their system and operational performance. It is anticipated that the Third Spiral (Feb 06) will produce systems that provide military utility and will transition to S-FLTS to establish the foundation system to build upon. Additionally, the Army intends to establish S-FLTS as a program of record for the FY08-13 program planning period.

Battlespace Awareness (BA) Summary

BA supports and is supported by the other functional concepts. BA enables JC2, force application and force protection to bring combat power to bear at critical points, avoid enemy denial and deception, breakthrough or circumvent anti-access and area-denial strategies, and thwart enemy attempts to harm U.S. interests worldwide.

BA capabilities strive to achieve superior situational understanding of the threat and battlespace; decision superiority using precision actionable intelligence to achieve desired effects rather than physical destruction alone; integration of multifunctional tactical, theater, and national intelligence sensors and sources; precision targeting and armed aerial

reconnaissance; and denial of enemy access to friendly information.

Recent operations have shown the value of space-based, airborne and ground C4ISR systems that are networked with manned ground systems to achieve Joint Force BA capabilities. The Army is developing organizations and fielding equipment to capitalize on this operational experience in today's force as well as in the building of tomorrow's force with future Joint Force BA capabilities.

Appendix 5: Command and Control (C2)

C2 is the exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. As defined by FM 6-0, C2 consists of the arrangement of personnel, information management, procedures, equipment and facilities essential for the commander to conduct operations. To accomplish this effectively, the commander fuses battlespace information with information on force locations and capabilities, as well as other information relevant to mission planning, into a shared situational awareness (Blue, Red, and Grey to include combat identification) that is displayed on a tailorable COP. The commander develops alternative plans of action, selects a course of action and directs force employment exercising C2. The military and rapid decision-making processes as part of the overall C2 allow for preparation of a campaign or battle and for response to battlefield opportunities or challenges. Key elements of C2 are a decentralized, networked and collaborative communications and computer environment that provides the precision guidance and timing capabilities that collectively support accelerated decision-making processes throughout the Joint Force. The synergy of this collaborative environment with the COP allows subordinate commanders to self-synchronize their activities, based on knowledge of the commander's intent and of the current situation in battlespace, and to execute actions seamlessly, with minimal or no requirements for deconfliction or coordination.

Army C2 is a critical enabler for and a fully interoperable component of JC2. Army C2 is an enabler for battle command, which is the execution of command against a hostile, thinking enemy (FM 6-0). JC2 joint concepts and Army battle command concepts are complementary and commander-centric. The C2 Joint Integrating Concept (JIC) capabilities are exercise command leadership; establish and adapt command structures and enable both global and regional collaboration; develop and maintain shared situational awareness and understanding; communicate commander's intent and guidance; plan collaboratively; synchronize execution across all domains; monitor execution, assess effects and adapt operations; and leverage mission partners. Both are focused on achieving better situational understanding and decision dominance.

Army C2 will interoperate seamlessly in the Joint Force and environment. Commanders must be able to exercise effective C2 of an interdependent Joint Force in rapidly changing scenarios involving complex distributed, simultaneous or sequential operations often with other agencies and nations. Commanders must effectively integrate disparate capabilities from a variety of sources into a cohesive force. Commanders must rapidly achieve coherent, decisive effects against a variety of adversaries, exploiting information superiority and taking the offensive whenever practical. Commanders must be prepared to make decisions in a volatile, uncertain,

complex, ambiguous environment against irregular, catastrophic, disruptive and conventional threats. Commanders must be able to conduct robust collaborative planning (e.g., develop and assess multiple courses of action and/or branches and sequels) under severe time constraints. Commanders will need to exercise the core functions of C2 anytime and anywhere in degraded network environments and from austere as well as robust fixed sites, from mobile sites (i.e., on the move) and in transition between sites. Commanders must communicate, collaborate and monitor joint and combined operations in a highly decentralized environment. Commanders must maintain unity of command within a joint and/or combined force and unity of effort with mission partners.

To properly support and sustain the commander's intent on the battlefield, the COP must also provide information from the common operating logistics environment (CLOE) that enables timely and accurate logistics readiness information and sustainment requirements to both operational warfighters and logistics managers. Army C2 will be in consonance with the transformation of Army logistics capabilities. These logistics capabilities must support operations that are continuous and distributed, across the full range of military operations. The future logistics system will be characterized by a net-centric, distribution-based, anticipatory, demand-driven, performance-based approach to the joint logistics enterprise. The central idea of focused logistics is to build sufficient capacity into the deployment and sustainment pipeline, exercise sufficient control over the pipeline from end to end, and provide a high degree of certainty to the supported Joint Force commander that future joint forces will receive the right support, at the right place, at the right time, and in the right quantities, across the full range of military operations. Although still in a conceptual exploratory phase, adaptive logistics is a capability to provide key aspects of the sense and respond logistics (S&RL) vision in a manner to create situational understanding and actionable information where none previously existed.

The concept of S&RL relies upon highly adaptive, self-synchronizing and dynamic physical and functional processes, employing and enhancing operational cognitive decision support. The S&RL concept predicts, anticipates and coordinates actions that provide warfighting advantages spanning the full range of military operations across the strategic, operational and tactical levels of war. S&RL lets logistics support more closely conform to unfolding battlefield conditions, while remaining intimately connected to a commander's intent, thereby enabling more fluid operations and creating an ability to seize local opportunities as they develop. It requires a network-centric enterprise and disciplined collaboration within and across communities of interest. Synchronizing the logistician's decision cycle to that of the warfighter enables a logistics system that is focused on the effect a given action in the logistics domain will have on the warfighter planned or executing intent. The end state is for logisticians to operate within the construct of a global, end-to-end joint distribution enterprise that synchronizes and integrates all elements of the logistics system to ensure consistent, reliable and predictable support to the Joint Force commander's concept of operations, in which speed and flexibility are the most demanding battlefield requirements.

A future enabler to S&RL is the use of micro-electrical mechanical systems and nano-technologies, with built in asset "health" monitoring, reporting and alert features. Using asset tracking and integrated micro-sensor capabilities in conjunction with C2 systems

will help enable focused logistics support by providing more timely and accurate information on the location and viability of assets. Moving forward with exploration and experimentation with advanced sensor technology capabilities will provide logisticians a unique opportunity to transform logistics, engaging necessary support actions when and where they are needed, while improving overall life-cycle management. As part of transformation, logisticians will be able to track and gain alerts specific to time-critical events. With improved asset visibility, logisticians can provide more timely and proactive management of assets relative to the environment, unique characteristics, handling, and operational protocols.

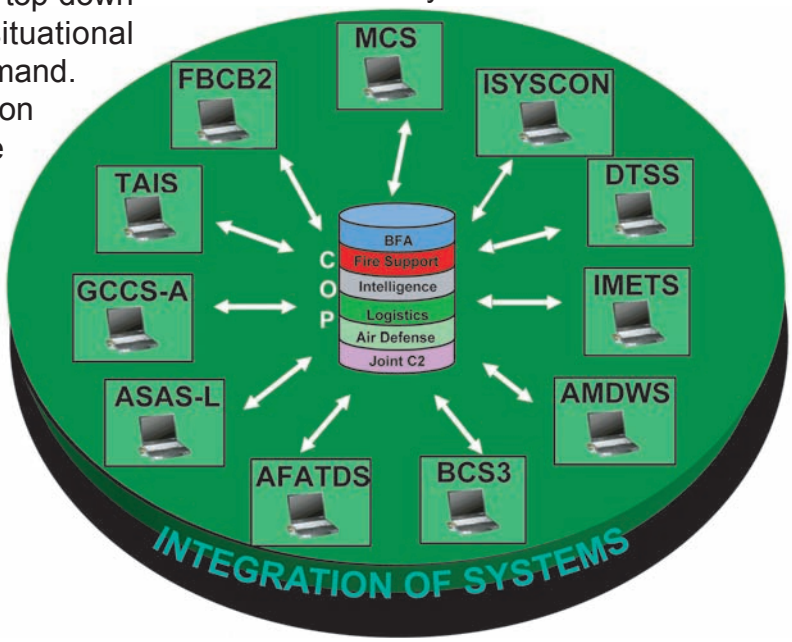
Battle Command

The Army views battle command, the art and science of applying military leadership and decision making, as the essential capability that enables the conduct of current and future joint operations. Enabled by C4ISR, battle command enhances the commander's ability to gain information and decision-making advantages over any adversary. Further, C4ISR networks within the Global Information Grid (GIG) will provide an inherently joint, top-down network that provides common situational awareness to improve battle command. Army battle command modernization efforts are designed to bridge the current to future forces, enable network-enabled battle command, and allow the operational and tactical commander to see first, understand first, act first, and finish decisively with unprecedented situational understanding and decision superiority.

Discussion of Key Command and Control Materiel Programs

Army Battle Command System (ABCS)

Description. ABCS is the Army's component of the Global Command and Control System (GCCS) and Combatant Commander deployment C2. It is a complex system of systems that receives and transmits information among the Joint Force. ABCS consists of subsystem software that provides specific support for the battlefield functional areas, including Global Command and Control System-Army (GCCS-A), Maneuver Control System (MCS), Air and Missile Defense Workstation (AMDWS), Force XXI Battle Command Brigade and Below (FBCB2), All Source Analysis System-Light (ASAS-L), Advanced Field Artillery Tactical Data System (AFATDS), Integrated Meteorological System (IMETS), Digital Topographic Support System (DTSS), Battle Command Sustainment Support System (BCS3), Integrated Systems Control (ISYSCON) and Tactical Airspace Integrated System (TAIS). Additionally, common software products enable information sharing with other systems and provide situational awareness of the battlefield to every echelon.



Program Status. The Army has reassessed the ABCS software and will conduct an operational test and evaluation (OT&E) for ABCS 6.4 in 2QFY05. The new baseline software will be used on all ABCS systems. ABCS 6.4 will maintain a joint interoperability with other Services at the division level and above, while still providing the COP at division and brigade levels within Services. The test will also assess the current distribution and sustainment strategy to see what initiatives can take place in order to further promote ABCS interoperability across the Army and within the Joint Force structure.

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

Description. GCCS-A is a computer-based, strategic, operational and tactical C2 system that provides readiness reporting, mobilization and deployment of AC and RC forces and links Army C2 systems to the joint fight. It also provides detailed information on intra-theater planning and movement, and the joint interface between JC2 systems and the Army ABCS components. GCCS-A provides joint COP information to Army users and provides Army forces information to the joint COP. GCCS-A is a seamless Army extension to the joint GCCS at echelons above corps through modular division levels. GCCS uses a common open-systems hardware architecture that has a combination of government and COTS hardware and software. The GCCS-A is an integral component of the GCCS family of systems (FoS), a networked system of information systems to facilitate joint command and control.

Program Status. GCCS-A is a fielded system within the ABCS. GCCS-A upgrades are based on operational needs and technical interoperability requirements with joint GCCS, DII COE and ABCS. GCCS-A, along with the other GCCS FoS, is mandated to migrate to a net-centric C2 capability; the current program in development to accomplish this direction is the DOD JC2 capabilities initiative (see below) is projected to begin fielding the new net-centric capabilities, integrated with the GIG Net-Centric Enterprise Services (NCES), during Block 1 execution in FY08-09.

Joint Command and Control (JC2) Capabilities

Description. JC2 capability is the DOD principal C2 information technology initiative. JC2 will enable decision superiority via advanced collaborative information sharing achieved through vertical and horizontal interoperability. JC2 capabilities are defined by joint mission capability packages (MCPs). Currently defined MCPs are (1) Force Projection, (2) Force Readiness, (3) Joint Intelligence, (4) Situational Awareness, (5) Force Employment-Air and Space Operations, (6) Force Employment–Land Operations, (7) Force Employment–Maritime/Littoral Operations and (8) Force Protection. JC2 applications and functions are based on GIG enterprise services (GES) enabling shared access to Service-/agency-/joint-provided data sources. JC2 capabilities is a systems integrator, replacing Global Command and Control–Joint (GCCS-J) and Service variants as the DOD principal C2 capability supporting the National Military Command System (NMCS) and Joint Force commanders (JFCs). JC2 Capabilities integrates databases, servers, client workstations, local area networks and computer software into an open, scaleable, network-centric single architecture while maintaining Net-Centric Operations and Warfare Reference Model (NCOW RM) and NCES compliance in accordance with the Joint Technical Architecture (JTA). The JC2 capabilities initiative is dependent upon NCES in order to enable

integration and interoperability of various systems in a net-centric environment.

Program Status. The Defense Information Systems Agency (DISA) has been designated by OSD as the lead component for the JC2 Capabilities Program acquisition and is in the process of working in concert with the FoS components to achieve a Milestone A decision by the end of 1QFY06.

Mounted Battle Command on the Move (MBCOTM)

Description. MBCOTM provides the maneuver commander and his staff with a highly mobile, self-contained and reliable combat vehicle-based digital command post. The MBCOTM mission equipment platform consists of a suite of communications and digital equipment/software integrated on a combat platform to enable commanders to influence the battle while maneuvering across the battlefield. MBCOTM provides situational awareness, collaboration and a COP, which allows the commander to maintain situational understanding while moving and physically separated from a fixed command post. Future plans include variants for the HMMWV, the Bradley Fighting Vehicle and the Stryker.

Program Status. Program is currently funded for RDTE in the FY06 budget. LRIP HMMWV versions were produced in FY05 and FY06 to support OIF.

Maneuver Control System (MCS)

Description. MCS is an automated C2 system that provides a network of computer terminals to process combat information for battle staffs. This is the proponent system for the common picture (integrates information horizontally and vertically to provide friendly

and enemy unit locations). It provides automated assistance in the collection, storage, review and display of information to support the commander's decision process. Both text and map graphics are provided to the user.

Program Status. MCS has successfully completed the IOT&E and has obtained FRP decision. MCS capabilities are being transitioned as injectors and will become part of the Joint Tactical COP Workstation (JTCW) software baseline. Command Post of the Future (CPOF) capabilities will also be added to MCS as a technical insertion.

Command Post of the Future (CPOF)

Description. CPOF is an executive-level decision support system that provides situational awareness and collaborative tools to support decision making. It was designed to support parallel, synchronous, asynchronous and cross-functional planning and execution. Team members share work spaces that embody their thinking about the current situation, and collaborate to create a rich, multi-perspective, shared operational picture. CPOF enables and expands the commander-to-commander interaction in order to magnify deep collaboration—collaboration that operates at the thought process level. CPOF enables commanders to access, view,

configure and tune data, visualize workspace, and processes in ways that support their thinking. It provides the means for sharing and accessing understanding and the co-creation of actions.

Program Status. CPOF is currently a Defense Advanced Research Projects Agency (DARPA) system which will transition to the Army in Apr 06 and will become a technical insertion into MCS.

Standardized Integrated Command Post System (SICPS)

Description. SICPS is a family of systems that include the SICPS Command Post Platform (CPP), the SICPS family of tents, and the Command Center System (CCS). The centerpiece of SICPS is the CPP. The CPP is a nondevelopmental effort that integrates fielded C2 and C4ISR systems and replaces legacy SICPS platforms designed to house only two workstations. The CPP is an enabler for the Army/joint battle command systems by providing a means to enable approved Army battle command systems. This is accomplished by hosting servers associated with the ABCS 6.4 architecture, as well as servers that support GCSS-Army. Additionally, it is capable of enabling future battle command software (i.e., CPOF and JC2). Through its ability to host multiple workstations and provide classified and/or unclassified local area networks, the CPP reduces the number of digitized platforms needed to support CP operations.

Program status. SICPS is managed under PEO Command, Control and Communications Tactical (C3T). Northrop Grumman was awarded the prime contract for CPP and CCS development and SICPS tents/TMSS being procured using COTS or modified COTS nondevelopmental items. Production Representative Systems (PRS) for use in contractor and government testing were used to conduct combined DT/OT. The LRIP phase was initiated at the approved Milestone C decision in Jul 05. IOT&E is planned for 4QFY06 and FRP decision is expected in 1QFY07.

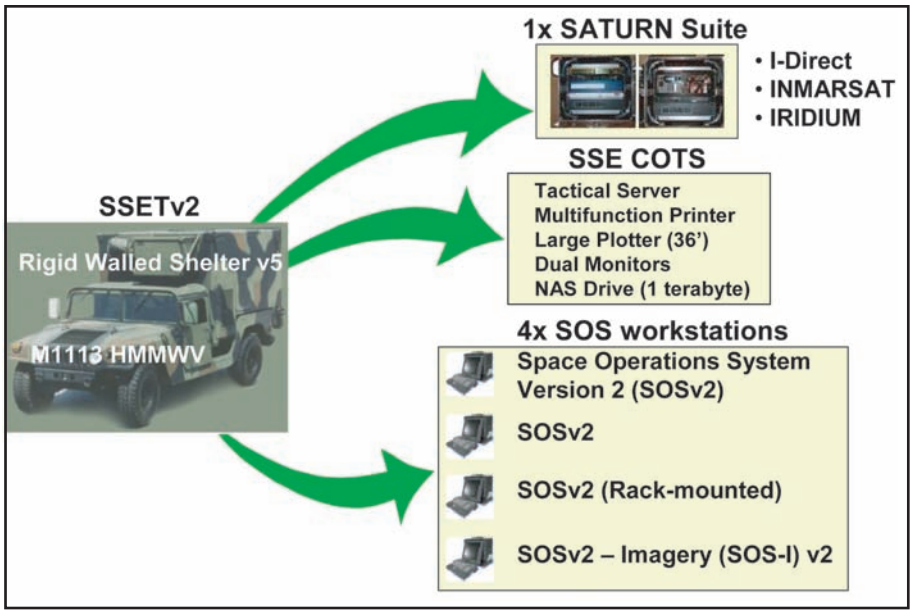
Army Airborne Command and Control System (A2C2S)

Description. A2C2S is the Army's above-the-ground battle command platform that provides the commander with a highly mobile, self-contained and reliable integrated digital command post that is integral to transforming the Army from the current to future modular force. The A2C2S, integrated on a UH-60L platform, enables the commander and his staff to traverse the battlespace while maintaining situational understanding through C4I connectivity at the decisive point on the battlefield at critical times. It provides a LOS and BLOS voice and digital communications package. This system is fielded to aviation brigades supporting divisions deployed in OIF/OEF.

Program Status. The program is currently producing LRIP aircraft platforms in FY06. Unit training is ongoing with existing aircraft fielded in 4QFY05 to support OIF. Other resources are being funded to support the installation of International Maritime Satellite (INMARSAT) onto the initial LRIP and current assets.

Space Support Enhancement Toolkit (SSET)

Description. The SSET is a mission essential item of equipment for the Space Support Element (SSE) resident within the corps and division headquarters. It provides capabilities needed by SSE to conduct space operations planning, integration and coordination. These



Program Status. The SSET is an emerging requirement that is not funded in the FY06-11 program. It has been developed through the efforts of the SMDC Space Directorate Battle Lab. In Dec 04, the Army Acquisition Executive assigned SSET system life-cycle management responsibilities to the Program Executive Office Intelligence, Electronic Warfare and Sensors(PEO IEWS).

functions aid in enabling the Joint Force commander to achieve the precision engagement, information superiority and battle command capabilities across the full spectrum of distributed ground force combat operations through better exploitation of space-based systems, products and services. The SSE approach is part of the space operational architecture supporting current and future force requirements as noted within Army doctrine, TRADOC *Pamphlet 525-3-14, Concept for Space Operations in Support of the Future Force* (updated 31 Dec 03). The SSET is currently a non-type-classified COTS/government off-the-shelf (GOTS) prototype system and has been combat tested in OEF and OIF. Employment during OEF and OIF has demonstrated that the space-based products provided by SSET-equipped teams provided enhanced C2 and situational awareness for land force commanders. It consists of a communications suite, four workstations and ancillary equipment housed in a rigid-walled shelter V5, mounted on an M1113 HMMWV. The emerging design incorporates a four-person SSE equipped with an SSET. This limited placement of personnel and equipment will help further refine space support to the tactical force.

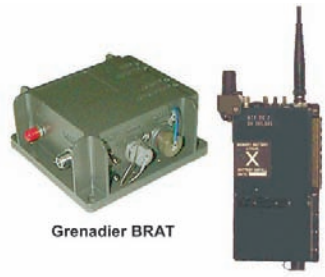
Force XXI Battle Command Brigade and Below (FBCB2)

Description. FBCB2 is a joint interoperable, digital, battle command information system for brigade level and below. FBCB2 is designed to provide mounted and dismounted combat elements with near real-time, integrated situational awareness and C2 functionality. FBCB2 enhances the ability of tactical commanders to better synchronize their forces, achieve agility and gain a sense of the battlespace through improved situational awareness and better combat awareness reporting while on the move. FBCB2 is a key component of ABCS. FBCB2 operates over both terrestrial communications networks and

SATCOM networks. The system consists of a ruggedized computer with a touch screen and keyboard in which the Soldier sees either a digital map or satellite imagery overlaid with icons representing the vehicle's location, other FBCB2/BFT vehicles, known enemy units, and objects such as minefields and bridges. FBCB2/BFT was expeditiously fielded in reduced quantities to every MACOM as well as the USMC and United Kingdom forces participating in OEF and OIF. As a result of lessons learned in OEF/OIF, the Army revised its Army battle command plan to deliver a consistent solution across the force within the next 18-24 months in order to provide partial "good enough" capabilities over time. FBCB2 requirements were refined to accelerate fielding efforts (OIF-like capability) and equip the AC and activated National Guard units to the FBCB2 Fielding/Distribution Plan, the Key Leader Option (KLO) "minus" architecture by the end of FY05; equip AC units to the full KLO architecture by FY07; equip AC units to the modular architecture in accordance with the Army Campaign Plan; and equip the National Guard units to the modular architecture by FY11.

Program Status. FBCB2 is currently funded to continue improvements in Network Operations Center re-architecture, synchronization of software releases, new satellite architecture and waveform redesign to address latency issues caused by increased OIF/OEF system demands, the completion of Type 1 encryption efforts, the development of beacon capability (Integrated Data Modem and Electronic Data Manager), dismounted vehicular product development, logistics product development, and Internet Protocol v6 development.

Grenadier BRAT (GB) and Mini-Transmitter (MTX) Blue Force Tracking (BFT) Systems



Description. GB and MTX are BFT systems that take advantage of the existing national space infrastructure. They give commanders the ability to track and receive position location information (PLI) and short brevity codes, in near real-time, from friendly forces that require a low probability of intercept/low probability of detection (LPI/LPD) C2 link. GB and MTX systems substantially enhance security and reliability through the use of LPI/LPD COBRA (collection of broadcasts from remote assets) waveforms, encryption certified by the National Security Agency, and military GPS. A space-based BFT Mission Management Center (MMC) supports GB/MTX use of the existing COBRA architecture by coordinating with national system managers and warfighting units to help collect, process and disseminate warfighter BFT data. During OEF and OIF, the GCCS successfully integrated disparate BFT systems used by different units and Services. SOF used the COBRA-based BFT systems due to the security advantages, while Coalition Forces Land Component Command (CFLCC) main formations used FBCB2. BFT systems gave operational-level commanders the most robust COP to date by substantially increasing their situational awareness.

Program Status. USASOC, USAREUR and USARSO were initially fielded 400 GBs. An additional 400 systems are currently being procured for USASOC to support ongoing real-world contingency operations. There are approximately 3,000 MTX systems produced and fielded to USSOCOM components; e.g.,

every USAF Special Operations Command airframe and deployed ground team in support of OEF/OIF has an MTX. The GB was acquired as a Warfighter Rapid Acquisition Program product, and the MTX and the MMC were developed and fielded as a result of supplemental appropriations and budget additions.

Single Channel Ground and Airborne Radio System (SINCGARS)

Description. SINCGARS provides commanders with a highly reliable, secure, easily maintained combat net radio that has both voice and data handling capability in support of C2 operations. SINCGARS, with the Internet controller, provides the communications link for the digitized force. The Advanced System Improvement Program (ASIP) models are of a reduced size and weight, providing further enhancements to operational capability in the Tactical Internet environment.

Program Status. SINCGARS continues to be the workhorse in the Army. FM Combat Net Radio in OIF/OEF and are being fielded to Active/ARNG/Reserve forces in current operations as well as supporting Army transformation.

Command and Control Summary

Army C2 and JC2 supported by fully leveraged net-centric communications and computers and ISR capabilities are at the core of realizing the required characteristics envisioned in the future force. Networked communications and intelligence packages will dramatically improve command and control, and enhance situational awareness, making it possible to achieve significant advances in tactical operations and strategic responsiveness. The Army has already made important steps towards this goal. The ABCS and the C4ISR infrastructure for the current digitized forces provide a near real-time COP to ground maneuver units and the joint forces. ABCS can also leverage theater assets such as JSTARS to increase the COP capability. In addition, the Army Command Post of the Future (CPOF) has demonstrated significant utility in current operations to improve the COP and increase situational awareness that resulted in enhanced C2. During OEF and OIF, the Army demonstrated a significant increase in combat power when it exercised these capabilities. Interoperability improvements between ABCS and joint and multinational systems have been achieved, and further improvements are planned with the Joint Requirements Oversight Council (JROCM) 161-03 Ground Force C2/SA Convergence effort, Joint Blue Force Situational Awareness (JBFSA) and Joint Battle Management Command and Control (JBMC2). The Army will continue to incorporate lessons learned from operating ABCS in developing the C4ISR infrastructure for the future force and executing the Army battle command migration strategy.

Appendix 6: Net-Centric

The Network

Concepts for network-centric warfare, full-spectrum dominance and decision superiority are driving C2 modernization efforts for the Army's current and future modular forces and the Joint Force. These concepts require a robust, modular, deployable and always capable network that provides universal access to all relevant authorities, assets and capabilities. This network consists of integrated information systems, supporting information

infrastructure and a knowledge-based force of individuals located across the entire spectrum of the battlefield from the Soldier on point, through a variety of operations and support centers in theater, to home station operations and support centers located worldwide. To achieve this level of networking, the focus is being shifted from a bottom-up to a top-down approach that develops integrated C2 network architectures designed to support battle command capabilities for the current and evolving future combat force in the JIM, full-spectrum operational environment. The Army is currently identifying baseline network capabilities for the JIM environment and will use a single Army lead for network development to enhance the current modular force and accelerate network development for the future.

Discussion of Key Net-Centric Materiel Programs

Satellite Communications (SATCOM)

Description. SATCOM systems provide a robust, flexible and seamless network capability that extends, and in some cases replaces, terrestrial capabilities with responsive, BLOS communications throughout the battlefield that permits users to access large databases necessary to support strategic, operational and tactical missions. SATCOM global connectivity supports the command and control capabilities of planning, coordinating, directing and controlling. SATCOM use is essential for the real-time direction of operations at each echelon of command. SATCOM enables tactical forces to exploit improved capabilities to coordinate fires; conduct operational maneuver on the unstructured, asymmetric battlefields of today; and assess the effects of previous operations and anticipate enemy actions. An integrated high-capacity SATCOM backbone provides reachback connectivity that allows implementation of split-based command and control and logistics support concepts. This architecture will also support interoperability with joint, coalition, commercial and civil communications networks. As a result, current and evolving modular forces will have reliable, on-demand, BLOS/NLOS communications for enhanced early warning, en route mission planning and rehearsal, and responsive CSS while maintaining a reduced footprint in theater. Reliable SATCOM enhances increased responsiveness, agility, versatility, survivability and sustainability.

Program Status. The MILSTAR satellite Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T) provides a protected (anti-jam) wideband, BLOS capability for Army modular divisions, BCTs and SBCTs. The program is currently in production and continues to be fielded. Phoenix, an SHF multiband satellite terminal, HMMWV-mounted, air-transportable system was awarded a development contract on 15 Apr 03. The first Phoenix fielding was in Jul 04. Tri-band terminals (X, C and Ku) were fielded in FY04 and FY05. A quad-band upgrade in FY06 will add Ka band. Phoenix will be fielded to Integrated Theater Signal Battalions (ITSB) FY04-08. The AN/TSC-85B and AN/TSC-93B are satellite X-band terminals used for BLOS range extension and reachback from deployed base to sustaining base in CONUS. Under the Army D Model System Life Extension Program (SLEP), all AN/TSC-93C and AN/TSC-85C terminals (67 AN/TSC-85s and 107 AN/TSC-93s) will be sustained to operate at least until 2012, including those that will be cascaded to the Army Reserves and National Guard. A cascade and sustainment effort was executed in FY04 and will continue thru FY08. AN/TSC-85 and AN/TSC-93 terminals are fielded to round out the ITSBs.

Combat Service Support (CSS) Satellite Communications (SATCOM)

Description. The CSS-SATCOM provides rapidly employed, BLOS communications-enabling hardware to logisticians at the tactical and operational levels. The program, which grew out of the Army G-4's Connect the Logistician focus area, provides COTS-based very small aperture terminals (VSAT) and a supporting global infrastructure to logistics activities integrated within and supporting the Army's modular force structure.

Program Status. With over 400 terminals in service, CSS-SATCOM has completed fielding to five divisions and 12 brigades in the AC and RC. The system is currently being fielded to the 25th ID and is aligned with the Army Campaign Plan for future fieldings. CSS-SATCOM was designated a formal program in 1QFY05 under the auspices of the Program Executive Office Enterprise Information Systems (PEO EIS).

Global Positioning System (GPS)

Description. GPS is a space-based radio position/navigation (POS/NAV) system that provides extremely accurate, continuous, all-weather, common-grid, worldwide navigation and three-dimensional positioning, velocity and timing information to land, sea, air and space users. These components are the space, ground control and user equipment segments.

Program Status. The Defense Advanced GPS Receiver (DAGR) began replacing the current Precision Lightweight GPS Receiver (PLGR) in modularizing and other high-priority units in 1QFY05. The DAGR includes the Selective Availability Anti-Spoofing Module (SAASM) and other significant improvements including size, weight and battery requirements. The PLGR will be cascaded from units fielding the DAGR to fill authorized requirements in other units. The DAGR is projected to be replaced starting in FY13 by an improved Military (M)-Code capable handheld GPS device when the associated M-Code satellite constellation and ground control stations have reached FOC.

Warfighter Information Network–Tactical (WIN-T)

Description. WIN-T is designed to provide the backbone of the tactical network, continuous and full communications-on-the-move capability at all echelons, joint and coalition voice and data services to all command posts, a flexible and dynamic task reorganization capability, and a more survivable and less complex network. WIN-T's single integrated network will provide multi-level classified joint and coalition voice and data services to all command posts. Conceptually, this is intended to eliminate the need for stovepipe (CSS-VSAT, Trojan Spirit, etc.) communications systems. WIN-T provides the key capability for on-the-move communications through a three-tiered architecture (ground, airborne, and space) that enables continuous

network connectivity. The ground layer will equip Soldiers, sensors, platforms, command posts and access nodes (signal shelters) with integrated transmission (radio) systems, switching and routing capabilities that will serve as WIN-T points of presence (POPs). The airborne layer will serve as an access node and relay by positioning transmission, switching and routing capabilities onto airborne platforms. The space layer will serve as an access node and relay by leveraging the transmission, switching and routing capabilities provided on the satellite.

Program Status. The program is currently in its SDD phase. According to the current WIN-T plan, a Milestone C decision is formally planned for Mar 06, after which it will enter LRIP. The purpose of LRIP is to procure units leading to IOT beginning in 4QFY08 and continuing through 1QFY09. The IOT would be preceded by product verification testing (contractor and government) in 2007 and 2008. The Army is presently examining how best to formulate a migration strategy from JNN to WIN-T. JNN was designed to be an immediate and quick fix to Mobile Subscriber Equipment (MSE) in order to support current rotations to OIF. While JNN provides significant near-term improvements to the current MSE, most evident in providing limited NETOPS and enhanced mobility, it does not have the capability, capacity or mobility required for the future force.

Joint Tactical Radio System (JTRS)

Description. JTRS is a family (ground, airborne and maritime domains) of common software-defined radios that provide seamless network connectivity throughout the battlefield in support of *Joint Vision 2020* objectives. JTRS is the military's affordable, mobile, high-capacity, lightweight, multiband radio system providing simultaneous voice, data and video communications. JTRS replaces 32+ currently fielded radio systems and will be a key component of the Tactical Internet and GIG using a family of network waveform applications. The Army is the executive agent for the JTRS program. Additionally, the Army is responsible for two (Clusters 1 and 5) of the four primary cluster efforts (Clusters 1, 2, 5 and AMF). Cluster 1 is developing the ground vehicular and airborne rotary-wing aviation form factors, while Cluster 5 is developing the handheld, manpack and small-fit form factors.

Program Status. Cluster 1: The JTRS ORD was updated in Apr 03 to Version 3.2. JTRS Cluster 1 is in the SDD phase. Cluster 5: JTRS Cluster 5 received a successful Milestone B decision on 26 Apr 04 and awarded an SDD contract to GDDS on 16 July 04. The JTRS Joint Program Executive Office (JPEO) has completed a program assessment and proposed a restructure for both programs. In addition, the requirement/user community is developing baseline, required capabilities that will support an incremental acquisition strategy. Upon completion of the assessment and requirements definition, the programs will return to the Defense Acquisition Board for approval of the Acquisition Program Baseline, program schedule, etc.

Bridge-to-the-Future Networks (BFN)

Description. BFN is an enabling component within the Army's LandWarNet concept of operations (CONOPS) for describing the Army's near-term vision for providing and operating within a net-centric environment to the lowest tactical levels. The Army's LandWarNet CONOPS is the Army's contribution to the GIG—consisting of all globally interconnected, end-to-end set of Army information capabilities, associated processes and personnel—for collecting, processing, storing,

disseminating and managing information on demand, which supports warfighters, policy makers and support personnel. It includes all Army (owned and leased) and leveraged DOD/joint communications and computing systems and services, software (including applications), data security services, and other associated services. BFN is the Army's bridging strategy to deliver increasing net-centric capabilities into the current force today, and will be followed by the initial transition to the WIN-T capability. Capability enhancements within the Army's BFN strategy are increased voice, data and video services that are joint network ready and supports the Army's modular designs. The BFN will provide the current force with a state-of-the-art COTS communications backbone network (high-speed and high-capacity) that will enable them to exchange information (voice, data and video) throughout the tactical corps and into the sustaining base. The objective of the BFN is to incrementally insert increased capability, COTS solutions to the Army's current force to satisfy existing capability gaps. BFN capability increments build off the recapitalization of the current MSE and Tri-Services Tactical Communications (TRI-TAC) tactical communications systems. The Army's BFN CPD fuses the Army's Joint Network Node (JNN), Connect the Logistician–CSS, and intelligence Trojan Spirit initiatives into a single strategy to deliver increased capabilities to the warfighter today. The BFN capability increments build off of the existing Area Common User System Modernization Plan (ACUS MP) and recapitalization of the current MSE and TRI-TAC tactical communications systems.

Program Status. The BFN Capabilities Production Document (CPD) was validated by the AROC on 7 Oct 04. An updated requirement (Increment 1) was signed by Headquarters TRADOC on 15 Sep 05 and is currently going through Army staffing. The pursuit of COTS solutions facilitates rapid delivery of increased capability to the current modular force and supported Combatant Commanders. Enhanced capabilities will be defined and documented within future increments to the BFN CPD, and potentially a CDD.

Joint Network Node (JNN)

Description. JNN is the Army's modernization of the tactical battlefields transport network and provides interconnectivity with Army and joint units and ties in NCES via the Defense Information Systems Network. Spiraling JNN into the force will provide commercial satellite augmentation to Army MILSATCOM, Internet Protocol (IP)-based services, Voice over IP (VoIP) augmentation to Defense Switched Network (DSN), unclassified/classified Internet down to the battalion level, secure digital telephone down to brigade level, and situational awareness. JNN provides a high-speed, high-capacity network communications backbone connection at the quick halt that is joint-capable, supports the warfighter's rapid movement and simultaneous operations, and disseminates information at all levels of security. Key items of the JNN architecture are SATCOM hub node, JNN and battalion command post (Ku/Ka SATCOM) node, as well as embedded local area network components. JNN is to be designated a program of record under the Area Common User System Modernization Plan (ACUS MP).

Program Status. In recognition of the aggressive schedule requirements and the needs of the current force warfighter for expeditious delivery of JNN-N capabilities, the Army Acquisition Executive directed a Milestone C decision review be executed in 1Q-2QFY06, followed by contract award in 2QFY06. Failure to execute these events in this time frame will adversely impact FY07 modularity fielding requirements identified in

the Army force structure baseline. JNN fielding to the 1st Cavalry Division and the 25th ID began in Sep 05.

Joint Network Management Systems (JNMS)

Description. The JNMS is a Combatant Commander (COCOM) and joint task force (JTFs) communications planning and management system. JNMS provides communication planners with the capabilities to conduct planning, engineering and monitoring for communications systems and networks supporting joint operations. It will plan and manage this diverse array of legacy and advanced information technology (IT) solutions that make up the joint battlespace—from fixed Defense Information Switched Network (DISN) infrastructure, across tactical satellite systems and into Service-unique tactical systems. The communications systems in support of the JTF include military deployable communications and DISN to host nation communications infrastructure to allow JNMS to support intra-COCOM, COCOM-to-subordinate Service component, COCOM-to-JTF(s) and JTF-to-Service task force network planning and management.

JNMS will manage the converged voice, video and data network that will traverse the modern battlefield, and consists of an architecture that supports both military legacy networks and the evolution to commercially based networking technologies. JNMS will be an open-system, standards-based architecture that is modular by design to allow easy integration of new technology and to adapt to different operational requirements, making maximum use of the best COTS and GOTS applications available, integrated into a package that is user friendly, easy to train, and which works in a distributed environment over constrained bandwidth.

Program Status. Program manager is currently developing a fielding/delivery schedule to support the validated system architecture for above-division formations. Current programmed funding provides for the procurement and delivery of the validated systems AAO of 56.

ISYSCON Tactical Internet Management System (TIMS)

Description. TIMS is the Army's communication planning and engineering system for current, future and contingency operations. TIMS performs network management functions critical for the ABCS and FBCB2 operations and provides command and control, planning and engineering of the Army's tactical networks, from battalion through theater, in support of joint and combined operations. TIMS is a C2 enabler that will support the full spectrum of military operations.

Program Status. The program is currently providing ABCS and network system management hardware/software tools to converting modular forces in accordance with the Army Campaign Plan and the Army Priority List. The program is currently funded to deliver required quantities to converting and FY06 and 07 deploying OEF and OIF units.

Net-Centric Summary

The Net-Centric Operational Environment (NCOE) implementation effort has the overall objective of creating a seamless, integrated net-centric capability to the forward edge of the battlespace, enabling full-spectrum dominance. The net-centric environment is a Joint Force framework for full human and technical connectivity that allows all DOD users and mission partners to share the information they need, when they need it, in a form they can

understand and act on with confidence; and protects information from those who should not have it. The NCOE has the potential to revolutionize joint operations by optimizing and even transforming how information and knowledge are generated, presented and used throughout the Joint Force and our mission partners.

The NCOE is more than a set of networked technical capabilities. The NCOE must provide the Joint Force with pervasive knowledge through the full integration of knowledge management, network management and information assurance.

Annex D Summary

Annex D of the *2006 Army Modernization Plan* provides an overview of key Army materiel programs funded in PB07. These programs are framed within the six joint functional concept/capability categories used by the JCIDS process to analyze Joint Force future requirements and guide Army and other Service modernization efforts towards those requirements as they emerge. Other annexes in the *2006 Modernization Plan* examine modernization paths of doctrine, training, installations, personnel and force structure.

Annex E: Personnel

Introduction

With our Army committed at war and transforming for the future, manning the force is vital to ensuring our Army possesses the joint and expeditionary capabilities needed to win our nation's wars. Having the right quality and quantity of personnel (Soldiers, Army civilians and contractors) at the right place and right time continues to be the essential task our personnel system must accomplish. In concert with other modernization efforts, our focus remains on Personnel Transformation (PT), fielding an Army Modular Force and sustaining the all-volunteer force.

Personnel Transformation

The Personnel Transformation initiative fundamentally changes the way the Army manages its manpower (forces and structure) and personnel (active and reserve components (AC/RC)), families, veterans, retirees, Department of the Army (DA) civilians and contractors). It includes the transformation of manpower and personnel programs, policies, processes and systems associated with each of the eight personnel lifecycle functions that comprise the personnel system of the Army.

Personnel Transformation focuses on improving the process flow of how we acquire, distribute, develop, deploy, compensate, sustain and structure all categories of personnel in all components. It requires changes in how we organize, equip, train and employ our personnel, units/agencies and systems on the battlefield, as well as in garrison. PT seeks to improve the speed and quality of human resources (HR) support to Soldiers on the battlefield, while streamlining the personnel/unit footprint in the battlespace. Much of the HR services and support will be accomplished through the Defense Integrated Military Human Resources System (DIMHRS) and other integrated HR systems.

The Enterprise Approach

Enterprise architectures facilitate change and foster a culture of innovation by clearly linking the information technology (IT) solutions of an organization with its operational needs. Personnel Services Delivery Redesign (PSDR) is the basis for the operational portion of the Army HR community's enterprise architecture, and there is a three-pronged approach to aligning technical solutions to meet the operational needs. First, implementation of an enterprise-wide person-

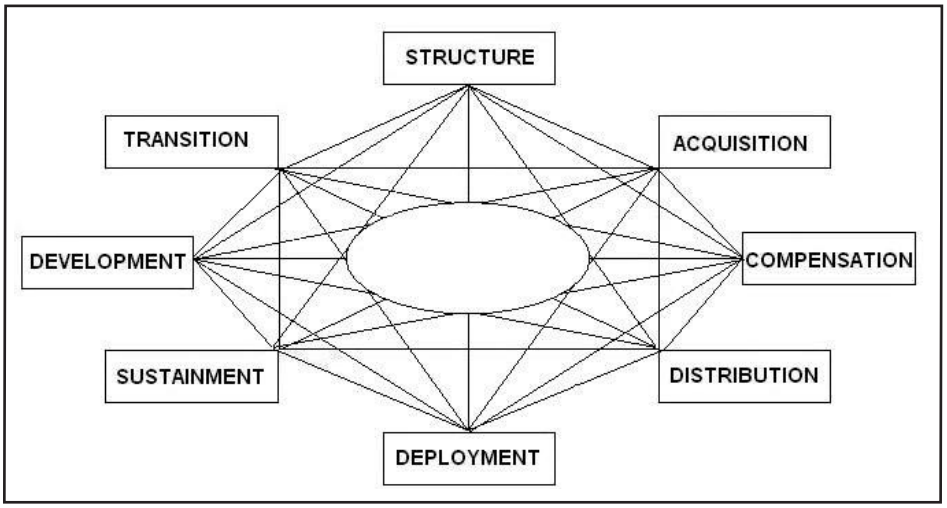


Figure E-1. Personnel Proponent Life Cycle

nel and pay system will provide a single, authoritative data source and application for the majority of HR services. This will centralize and simplify the personnel community's IT solutions, enhance responsiveness and improve data accuracy. Second, a Services-oriented Architecture (SOA) will integrate the enterprise application with other battlefield services such as postal operations; morale, welfare and recreation (MWR) services; casualty operations; personnel accounting and strength reporting; replacement operations and other capabilities to provide the full-spectrum support system the Army's future force requires. Third, optimizing the remaining portions of the existing environment through legacy system modernization, migration or shutdown will enable a modern, comprehensive suite of services for the commander and Soldier to gain near real-time knowledge with 24/7-accessibility.

Personnel Services Delivery Redesign (PSDR)

PSDR provides the construct to provide end-to-end personnel services to Soldiers and supports the Army's modular transformation by maximizing the capabilities of enhanced personnel IT and bandwidth capabilities. PSDR aggressively applies the lessons learned from Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF), mostly centered on the need for connectivity, and appropriate equipping and manning of HR units/organizations. This redesign addresses the loss of personnel support battalion (PSB)/ Soldier support battalion (SSB) structure by migrating tasks to battalion and brigade S1 sections resourced with HR professionals in adequate numbers and critical equipment to accomplish expanded requirements, enabling them to bridge directly to the appropriate CONUS-based HR professionals to accomplish personnel services tasks. PSDR also provides new theater-level Adjutant General (AG) units for casualty reporting, postal operations, and reception, return to duty, rest and recuperation, replacement and redeployment. The Army G-3 is directing a four-phase implementation plan with the completion of redesign for all components by FY08. Implementation is synchronized with the Army Modular Force Plan, deployments, Army Campaign Plan, Integrated Global Presence and Basing Strategy (IGPBS), Installation Management Agency (IMA) and Force Stabilization.

Defense Integrated Military Human Resources System (DIMHRS (Pers/Pay))

The Army is in the forefront of the DOD effort to develop the congressionally mandated DIMHRS. DIMHRS will provide a single, unclassified, integrated military personnel and pay management system for all DOD military personnel during peace, war and mobilization/demobilization. For each service member, DIMHRS creates a single record of service for his or her entire career, regardless of career status, ensuring accurate and timely access to information for all authorized users, including the service member. The Army will be the first Service to field DIMHRS.

Army Enterprise Human Resources System (Army eHRS)

The Army's human resources community will address those processes and capabilities DIMHRS does not fulfill by developing and implementing additional compatible modules of PeopleSoft products. To bridge the gap between the functionality our legacy systems provide and future HR systems, the Army will leverage available technology, implement improvements to enhance capability, prepare customers for change, and position intermediate personnel systems for integration and/or subsumption. Much progress to date has

been achieved in the current high operating tempo (OPTEMPO) environment without external funding and limited manpower, but can only continue with additional resources and personnel who have functional and/or technical expertise in developing and fielding large commercial off-the-shelf (COTS) HR systems. Training HR professionals and specialists to operate in the new environment will be done in cooperation with the DIMHRS effort at the higher levels, but the Army will be solely responsible for training the Army HR community through classrooms and labs as well as self-paced online classes.

eMILPO

The eMILPO application continues to serve as the Army personnel community's premier tool for personnel accounting and services. As a web-based application, it has modernized many personnel processes. Through the DataStore query tool, units and personnel specialists have ready access to information that previously was limited and cumbersome to obtain. The design of the software also enables greater flexibility in modifying the application to meet the changing needs of our Army at war. Since fielding on 1 August 2003, eMILPO continues to adapt to the critical needs of commanders and Soldiers fighting the global war on terrorism by providing a personnel system that delivers relevant and ready capabilities. In addition, eMILPO supports Army transformation and the impending transition into the DIMHRS (Pers/Pay). Continued funding for this program is essential for eMILPO to mitigate risks associated with the DIMHRS fielding schedule, as well as support changes needed within eMILPO through engineering change proposals (ECPs) needed for improvement of command-level visibility of deployment restrictions, promotions, mobilization, interface establishment and Soldier support issues needed to support critical, near-term, wartime requirements, etc.

Forms Content Management Program (First Form Electronic Evaluations)

The goal of the Army Publishing Directorate is to replace the Army's existing electronic form programs with a standard, intuitive, easy-to-use, Army-wide, electronic forms solution available as part of Army Knowledge Online (AKO). This new program will increase interoperability across the Army in addition to reducing development and sustainment costs associated with electronic forms management. The program's capabilities will include electronic signatures, document routing, work flow and content management. Military evaluation and military award forms are the first fully functional forms with other documents scheduled for phased implementation. Beginning in the second quarter of Fiscal Year 2006 (FY06), the AKO forms page will allow users to easily route forms between dispersed locations and monitor management controls tracking metrics for process performance.

Deployed Theater Accountability Software (DTAS)

The DTAS application is being developed to serve as a strength accounting tool with classified processing capabilities compatible and complementary to eMILPO. DTAS provides near real-time personnel asset visibility of deployed Soldiers at all echelons by enabling deployed commanders/human resource managers to account daily for personnel by name/SSN, unit and location. The software provides a number of firsts for the Army personnel community as it provides disconnected-operations capability updated through the Secret Internet Protocol Router Network (SIPRNET). When communication is available, the software provides users the

capability to track all categories of personnel in a deployed theater (to include all military services, civilian government, civilian contractor, civilian nongovernmental organization, and coalition forces), meets the Office of the Secretary of Defense (OSD) medical surveillance guidance, and tracks personnel deployment date histories. This software enhances senior leader decision-making capability at the tactical- through strategic-levels by providing a concise, common operational picture of deployed forces. Also, the software can be compatible and provide complementary capability to DIMHRS. Additional funding for this program will increase overall productivity by providing fully integrated strength management capability for better responsiveness in replacement operations and fully integrated deployment manifesting capability to reduce separate systems and improve data reliability.

Army System of Systems Architecture (SOSA) Database

The SOSA is the Army's personnel system database. By direction of the Secretary of the Army and the Army Chief of Staff, in Army Knowledge Management (AKM) Memo #3, all manpower and personnel systems must be registered in the SOSA. It provides an accountability of and tracks detailed information about Army HR programs, systems, models, reports, extracts and databases maintained within the Army HR community. SOSA is a repository that contains current information on all Army G-1 information systems. It contains vital system information such as personnel system descriptions; the proponent's administrative information (name, address, telephone number, etc.); system interfaces; Federal Information Security Management Act (FISMA) data requirements; Business Management Moderation Program (BMMP) data requirements; and other important functional and technical information necessary for supporting system development for Army and DOD developers. This repository of information is accessible via the Internet (https://www.armyhr.hoffman.army.mil) with a preapproved password. The SOSA is a tool that will help facilitate a smooth migration from legacy systems to DIMHRS and other functional development efforts. Information contained in SOSA is transferred into the Army Portfolio Management System (APMS)/Army Information Technology Register (AITR).

Army Portfolio Management Solution (APMS)

The APMS addresses the portfolio management requirements specified in the Clinger-Cohen Act of 1996. APMS is a decision-support tool comprised of four modules: the Army Information Technology Registry (AITR) module, the Domain Certification module, the Capital Planning and Investment Management module and the Capital Planning and Investment Control (CPIC) module. The AITR module will maintain the Army inventory of active IT systems in APMS. Additionally, the module will maintain the inventory of IT systems deleted from the registry for historical reporting and reference purposes. The Domain Certification module supports the process by which every system that spends $1M or more in a given fiscal year must be certified by the associated DOD Investment Review Board (e.g., Defense Business Systems Management Committee (DBSMC), applicable only to the business mission area). The CPIM Portfolio Rationalization module supports the development of the Army CIO/G-6 IT investment strategy outlined in the Army program plan. The Capital Planning and Investment Management strategy is founded upon the concept of reviewing and evaluating all command, control, communications, and computers (C4)/IT related investments and

establishing a recommended funding priority listing based upon the capabilities that the proposed IT-related investments provide to the Army. The CPIC module will be configured and implemented using the APMS CPIC module solution for the submission of Office of Management and Budget (OMB) 300/53 reporting.

Personnel Transformation Challenges

The Army has over one million military personnel geographically dispersed across seven continents. Soldiers are continually moving both geographically and between components of the Army and duty statuses, entering and exiting the Army and requiring frequent personnel services. The Army currently relies on five major databases and over a hundred different applications, subsystems, reports and queries to manage manpower and personnel services. Many of these databases and subsystems use different data standards and protocols, making modernization and integration difficult and expensive.

A single, integrated military personnel and pay management system is critical; it will allow better tracking of Soldiers from home station through mobilization to the battlefield and back, manage and safeguard sensitive casualty information in a media-rich environment and measure the OPTEMPO of individual Soldiers. Future force Soldiers will train for a more complex warfight. As a result, there will be an ever-increasing need for quality recruits to answer the Call to Duty. The Army will be in sustained competition with the private sector and other governmental agencies to identify and recruit smart and innovative people to sustain our all-volunteer force. After initial training, these Soldiers must sustain learned skills and develop new skills needed to stay current with rapidly changing technology and situations. Likewise, our effort to retain these highly skilled Soldiers—as they reach decision points on whether to continue their careers in the Army—must continue to achieve the success we enjoy today as competition from the civilian job market, where opportunities abound for their qualifications, will remain keen.

Increased security concerns put multiple demands on our HR assets, requiring valuable time and energy from our units, leaders and Soldiers from other areas of mission accomplishment. Recently added demands of homeland security and defense (such as natural disaster relief efforts) have caused

additional strain on the Army's ability to fund other transformation efforts such as well-being programs, personnel research and career development issues and personnel systems improvements. The Army personnel community continues to improve data quality, reduce redundant manual input of common data elements and eliminate manpower intensive analysis of raw information. These improvements—complemented with efficiencies realized from the enterprise approach to Army HR systems; business process reengineering; leveraged web technology; data cleansing; and preparing for a multicomponent, joint, DOD pay and personnel system—will improve strategic responsiveness, enable Army

transformation, enhance personnel services and provide reach capability, thus enabling reductions in redundant layers of personnel staff on the battlefield.

Additionally, the Army is currently restructuring through three major initiatives: Base Realignment and Closure (BRAC), IGPBS and Army Modular Force (AMF). BRAC will divest the Army of unnecessary installation infrastructure and will use the resultant savings to improve the fighting capabilities and quality of life for military forces. IGPBS will restation about 70,000 Soldiers from bases in Europe and Korea back to the United States. The BRAC and IGPBS initiatives will aid the Army as it transitions from a division-centric force to a brigade-centric force under AMF. As the Army progresses through these major reorganization efforts, the personnel community must ensure that units and organizations are staffed with the right mix of Soldiers and DA civilians to accomplish their missions.

Strength Management System Redesign (SMSR)

The fielding of the Enlisted Specialty (ES) model in mid-FY05 marks the completion of the SMSR effort, a multi-year effort to build a new Army strength analysis and forecasting system for the Army G-1 and all stakeholders. The suite of new models, collectively known as the Active Army Strength Forecaster (A2SF), uses the latest algorithms, processors, databases and telecommunications to form a state-of-the-art strength management and forecasting system. Among the numerous improvements, this new system increases flexibility in modeling manpower policies and programs, provides greater accessibility though web-based technology, improves projection accuracy, and reduces operation and maintenance costs by a half million dollars per year.

Military-to-Civilian Conversions

The Army has embarked on a strategy to convert military positions to civilian as a down payment to build and sustain at least 42 AC Brigade Combat Teams (BCTs). This initiative will enhance Army force capabilities, reduce stress on the current force, enable the transition to a future force and increase agility by creating modular units. Military-to-civilian conversions are a critical part of kick starting the additional brigades for modularity. During the FY06-11 budget planning process, the Army identified nonmilitary essential missions being performed by military personnel. Each operating agency was provided a target number of spaces to convert. The Assistant Secretary of the Army and the Chief of Staff assigned a mission of 15,000 conversions to the major Army commands (MACOMs) and direct reporting activities. Headquarters, Department of the Army (HQDA) approved and funded 7,604 positions for conversion in FY05. As of 29 September 2005, 5,508 positions were filled/committed. The current figure for the number of positions converted from military to civilian that have been filled and committed as of 12 January 2006 is 6,151 including 278 commitments. This represents 73 percent of the combined FY05 and FY06 target of 9,463 positions to be converted. Additional conversions are programmed for the out-years in Defense health programs. We continue to work with the Joint Staff and the OSD for additional conversions in Joint and Defense programs.

Army Civilians

The Army civilian workforce continues to contribute in significant ways to the Army's overall mission accomplishment. Planned enhancements to personnel programs and systems affecting the civilian workforce are captured in four primary strategic objectives:

implementing the National Security Personnel System; planning and forecasting for civilian workforce needs; obtaining and sustaining a supportive and diverse civilian workforce, and providing professional, customer-focused civilian human resource services.

National Security Personnel System (NSPS)

The NSPS is a new, flexible, civilian personnel system that will enable the DOD to become a more competitive and progressive employer at a time when the country's national security demands a more responsive system. NSPS will streamline the hiring process, improve the performance management process, increase flexibility to reassign employees and increase supervisor accountability. There has been significant progress in 2005 in the detailed design and development of NSPS. Army employees participated in a performance factor validation survey. The Army NSPS Campaign Plan was released in August, and the Army NSPS Campaign Plan annexes were released in October. Army training plans and preparation are underway. Train-the-trainer sessions were conducted in October, November and December, with additional sessions scheduled. Training of the HR workforce began in December. Training of supervisors and managers will begin in early 2006. The NSPS final regulations were released to Congress on 26 October 2005 and published in the *Federal Register* on 1 November 2005. On 23 November 2005, the draft implementing issuances were released. They provide details for carrying out HR provisions included in the NSPS regulations. Continuing collaboration with the unions on these provisions began on 1 December 2005.

Online Civilian Personnel Systems

The Army continues in the forefront of initiatives to create a fully automated civilian personnel support system that is web-based, real-time and 24/7-accessible for Civilian Personnel Operations Centers (CPOC), Civilian Personnel Advisory Centers (CPAC), managers, employees and potential employees. With the development of the Army Portal and Army Staffing Suite, the Army has continued to reach these goals. The Army Portal provides a one-stop, web-based application for access to all Army civilian HR tools and applications. These applications allow personnel to create and track Request for Personnel Actions (RPAs) as well as query prevalent organization, employee and position data. The Staffing Suite is a set of tools used in the recruitment process to fill Army civilian personnel vacancies. The tools include functionality to post vacancies on the web, allow applicants to search for vacancies, provide the mechanism for applicants to create resumes online and submit them for consideration, create referrals and forward them with resumes electronically to managers and allow managers to select candidates online.

Furthermore, the Army Benefits Center-Civilians (ABC-C) has earned an outstanding reputation for supporting retiring civilians by providing automated benefits support and

personal benefits counseling. The ABC-C has greatly improved civilian retirement application processing times and ensured that employees contemplating retirement are provided consistent and accurate information. To further expedite the process, work has begun on developing an online retirement process rather than the current process that requires employees to mail in their retirement packages.

Civilian Forecasting and Analysis Systems

The civilian Workforce Analysis Support System (WASS) and the Civilian Forecasting System (CIVFORS) improvements have been fielded in phases over the past five years. The improvements have included the development of a web site focused on workforce revitalization needs based on identified targets, a capability for generating forecasts as designated by users for specific population groups, and up-front analyses and feedback to users on the feasibility of forecasts submitted for execution. The output from our tools have been used to integrate analyses and forecasting data into the development of staffing plans for recruitment as well as a number of other areas of importance to the HR community to include tracking the aging workforce and forecasting retirements and forecasts on mission-critical occupations. The planned improvements include the modularization of CIVFORS code to increase maintainability and reduce costs, increase accuracy, and provide back-end evaluation of model quality with feedback to users, access to turnover statistics with diagnostics on potential turnover problems, and build of an analysis and forecasting library for users.

Aging Civilian Workforce and Increased Retirements

The median age of the Army's civilian workforce still remains significantly older than the civilian labor force. Retirements have been steady and averaging at about 8,000 per year as predicted. The projected number of retirements is expected to decrease between FY08 and FY10 as the boomer retirement group moves out of the workforce. The biggest challenge for Army civilians will be the recruitment of experienced, qualified workers to fill behind the retiring boomer population. The competition for these workers is anticipated to be very keen. The Army's HR community is engaged in pursuing all available strategies to get ahead of the competition to include continuing to fight for sustaining intern funding, holding on to older workers, encouraging transfer of knowledge and using projected critical shortfalls in advance recruitment planning.

Civilian Leader Education, Training and Development

Implementation of the Strategic Army Workforce (SAW) concept has been paused pending implementation of the National Security Personnel System. Other Army civilian leader development efforts such as the Review of Education, Training, Assignments for Leaders (RETAL) and the establishment of a DA-wide Business Enterprise Solutions Trainee (BEST) and Fellows Program are now being worked as well as a pilot version of the SAW. In support of the Secretary of the Army's vision, the RETAL Task Force will recommend issues for continuity and change so that the Army can best train, develop and assign military and civilian leaders who are able to accomplish the missions required among the complexities and challenges the 21st century national security environment.

This will be accomplished by analyzing existing Army education, training and assignment policies and programs, and recommending modifications to provide for an optimal development continuum. Furthermore, the Army is establishing the DA BEST Intern Program and the DA Fellows Program. These programs, coupled with a modified SAW (should it prove feasible), will enhance our ability to recruit and retain a high-quality, mobile and multifunctional workforce for years to come, and will help us fill the bench with outstanding future civilian leaders. The proposed guidance establishes the framework for the programs and allows substantial flexibility and customizing by employers and Army Civilian Training, Education and Development System (ACTEDS) career programs alike.

Career Intern Program

The Army Career Intern Program assesses, educates and trains members of the Army's future civilian technical and professional workforce. Training consists of prescribed sequential and progressive formal classroom sessions and on-the-job developmental assignments. Upon completion, employees possess requisite skills, abilities and leadership competencies required to immediately fill critical Army workforce positions. The program, which has been in place for many decades, has grown and transformed with the ever-changing environment. Interns hired into the program in the 1970s and 1980s now make up the largest portion of Army senior civilian managers. Over 60 percent of interns who started with the Army currently remain as they near retirement age. Workforce planning indicates the program should have 4,000 intern graduates a year for the next 10 years to meet Army needs 15 to 20 years in the future—as well as provide journey-level workers in the interim. During the past two years, the program has been able to grow the intern pipeline from an average intake of only 400 to 500 interns per year to about 800 of the 4,000 needed. Workforce planning continues to show that the program allows the Army to recruit and train interns who make their lifetime careers with the Army. These interns are provided training throughout their federal career, enabling them to grow into the next generation of senior executives and leaders of the Army. Future endeavors include enhancing the intern program to capture the elite and brightest applicants, along with providing the advanced training, education and skills that will provide maximum support to the war-fighter and a transforming Army.

Active Component End Strength

At the end of FY05, the Army's AC was slightly less than 493,000. The Army's transformation into a Modular Force and the continued state of national emergency necessitated the AC end strength increase to 502,400.

Manning the Force

The Army continues to implement a progressive and multifaceted personnel and unit stabilization system to overcome mission impeding personnel turbulence distractors. As the Army continues to conduct combat operations, it is transforming to a unit focused manning strategy. The Army's force stabilization policy increases unit readiness and deployability while reducing Soldier turbulence. This directly impacts units' ability to train, fight, win and return together from missions. Unit Focused Stability is setting the condition for the Army to build more deployable combat units. The Army will continue to be manned to achieve and maintain readiness, combat effectiveness, deployability and stability in support of Army priorities. However, the primary focus for all personnel resources is manning transition teams, deployed and

deploying forces. The Army will establish policies for the length, frequency of tours and number of deployments for the AC/RC. This will lead to a thorough force structure analysis that will result in recommended force structure adjustments, including the identified required adjustments to the AC/RC force mix. The Army continues to address the necessary refinements concerning the proper mix of manpower among the military, DA civilians and contract support requirements. This ongoing refinement process ensures that the Army clearly delineates core and non-core functions in the effort to outsource or privatize non-core functions. The metric for success for all actions will be the decrease of turmoil on units, Soldiers and families, resulting in increased combat readiness throughout the Army.

Force Stabilization

The driving concept behind Force Stabilization is to produce highly cohesive combat teams capable of increased operational effectiveness while decreasing turbulence and increasing predictability and stability for Soldiers and their families Army-wide. To achieve unit cohesion and higher operational capability in our combat units, the Army must (1) synchronize the assignments of large numbers of Soldiers with training and employment of units; (2) manage personnel gains and losses to reduce daily personnel turnover stemming from the individual replacement system; and (3) manage force modernization and force structure changes within the force stabilization concept. Force Stabilization is supported by two manning strategies: Stabilization and Unit Focused Stability.

Under the Stabilization strategy, all Soldiers stationed at CONUS installations are eligible to be stabilized at their current assigned post for longer periods and will be moved by Human Resources Command (HRC) based on three prioritized criteria: needs of the Army, leader development and individual preference. Although Soldiers in higher-density military occupational specialties (MOSs) and at larger installations are likely to be stabilized longer than those in lower-density MOSs or at smaller installations, all Soldiers can expect to be assigned to their posts for greater periods of time than a typical tour previously available. Stabilization meets the Army Chief of Staff's (CSA's) intent to stabilize Soldiers for longer periods and reduce PCS moves while offering Soldiers and families in CONUS predictability and stability in the unit and community.

Unit Focused Stability serves as a key enabler for unit rotations by synchronizing the assignment of Soldiers with the unit's operational time line. Unit Focused Stability is supported by two manning methods, cyclic and lifecycle manning, which are applied based on unit mission, operational requirements and the overall situation. Cyclic manning has been approved by the CSA as a method but not yet for implementation. Lifecycle manning has been approved by the CSA and will affect all maneuver BCTs. Army G-1 has established the lifecycle implementation schedule, in coordination with G-3, based on current and future operational deployment and redeployment time lines as well as the current modular transformation schedule. Currently, ten BCTs are under lifecycle management (LM) and

at least three more BCTs will undergo LM in FY06, with the goal of executing LM for all BCTs (except those in Korea and Germany) by FY11. Under the lifecycle management model, Soldier assignments to that unit are synchronized to its established 36-month period, or life cycle. Soldiers arrive, train and deploy together during the unit life cycle, providing commanders and Soldiers with a predictable environment where they will be able to build, train and sustain high-performing, cohesive teams. Lifecycle management will help reduce nondeployable problems because each Soldier's time line will be synchronized with the unit's life cycle and Soldiers will not PCS/ETS (unless ETS is due to chapter action) during the unit life cycle but at the end of it. Together, these strategies that support Force Stabilization will support the Combatant Commander with more deployable, combat-ready forces while also benefiting the Soldier and his family at home with enhanced stability and predictability.

Individual Ready Reserve (IRR) Management and Mobilization

The Individual Ready Reserve (IRR) has the potential to become a much greater asset for the Army. While its mission is to provide a pool of Soldiers who are "individually ready" for call up, in reality a majority of today's IRR members are either unaware of their service obligations or not qualified to perform further service. The global war on terrorism, the Iraq deployment, and other ongoing operations have all demonstrated that the IRR is critically necessary due to consistent manpower requirements. The immediate challenge is to reset and reinvigorate the IRR by providing the management tools necessary to implement large-scale change. On 30 November 2005, the Secretary of the Army approved a plan to transform the IRR. This plan outlines several initiatives geared towards creating a reliable source of skilled manpower by redefining IRR eligibility, utilization and culture. The proposed transformation initiatives will be executed in a phased approach and include: (1) Individual Warrior Category: To enhance the viability and readiness of the IRR and develop an identity with increased esprit de corps for IRR members, the Army is creating a special category within the IRR for its ready and qualified IRR Soldiers. This special category will be called the Individual Warrior (IW) category. This is a cultural shift away from one amorphous group of individuals to create a cohesive group of Soldiers individually trained who are ready to augment Army missions when needed. Individual Warriors will be required to maintain a higher state of readiness by participating in virtual musters, attending annual readiness processing and, through managed training opportunities, maintaining proficiency in their military occupational specialty. This is the commitment required to retain their status in this new category and remain competitive for promotion; (2) Increase Expectation Management: The Army will develop and deliver an Expectation Management briefing and Obligation Confirmation Checklist for all Soldiers at initial enlistment and a RC orientation briefing for all transitioning Soldiers. Variable enlistment length contracts will specify the number of years and status (active duty/selected reserve/IRR) in which an individual is required to serve out his or her eight-year military service obligation (MSO); (3) Control the Population: The Army is conducting a systematic screening of the current IRR population to reconcile records and identify non-mobilization assets. If actions cannot be taken to rectify a Soldiers' nondeployable status, then disqualified Soldiers will be identified and recommended for separation. This effort will aid in establishing realistic readiness reporting. The Army will also implement control mechanisms to assess incoming data in order to manage ongoing

reconciliation and improve data integrity; (4) Implement a Screening and Training Program: The Army will institute a screening and training program that aligns with the Army Force Generation (ARFORGEN) model. The Army will screen approximately 20,000 Soldiers annually; programmed training (military occupational specialty refresher and/or reclassification training) is dependent on needs of the Army. Soldiers can request through their career managers additional training to include annual training (AT) or professional development training in order to remain eligible for promotion. As the Army continues to transform to meet ever-changing global challenges, it must simultaneously evolve more meaningful ways for great American citizens who join the Army to continue to serve in a Ready Reserve status that is credible, relevant and enhancing to the individual's willingness and ability to serve.

Army Recruiting and Retention

Army recruiting continues to be the critical foundation for providing quality forces supporting unit readiness and fighting the global war on terrorism. Significant initiatives to modernize the supporting information systems for this critical mission are ongoing. This is enabling the entire accession process to be shaped to provide the right Soldier, in the right MOS, to the right unit, at the right time. Army recruiters must have the ability to show detailed information on the full range of job opportunities, duty locations, training availability and incentives to applicants. This information must be available at anytime and anywhere the recruiter is working. By web enabling the recruiting systems, the Army is expanding the capability to provide this individualized counseling beyond the Military Enlistment Processing Stations (MEPS), and directly to 18,000 regular, Reserve and National Guard (NG) recruiters. Additional web-enabling

initiatives are underway to allow interested civilians to query Army job opportunities that would interest them, their friends or family members, without the immediate or direct assistance of an Army recruiter. As these highly visible modernization activities are ongoing, the technical infrastructure must be upgraded to meet the demanding user response requirements and to maintain compatibility with modern operating systems and security requirements. Technical improvements are reducing software license and system maintenance costs by integrating and leveraging cross-command platforms, utilizing enterprise licenses, reducing the numbers of proprietary middleware components, and moving to open standards. To maintain the high pace of the recruiting mission, it is imperative that the supporting systems provide high levels of availability, even in the midst of natural or terrorist disasters. By fully utilizing cross-command assets and modern computing technologies, the recruiting systems are hardened and tested to provide fail-over protection, assuring continuity of operations from separate Midwest and East Coast facilities. The Army will continue to improve the accession process, modernize systems to return uniformed recruiter spaces to the Army, and ensure we continue to attract the quality and quantity of Soldiers needed for our future force.

The Army retention program continues to be the unit commander's program for maintaining unit readiness and stability. It is mission critical to provide worldwide access to deployed and CONUS units to match the needs, wants and desires of individual Soldiers with changing Army needs. Army unit strength and Soldier reenlistment policies and incentives are constantly being updated. Updates such as stop-loss, reenlistment bonus criteria, changes to MOS, training availability and unit position vacancies (U.S. Army Reserve (USAR) and NG) must accurately replicate throughout the Army systems, and be immediately available to unit commanders and Soldiers within the reenlistment eligibility window. The Army retention systems provide commanders, Soldiers and career counselors with the information and automated systems to increase unit readiness and effectiveness by retaining our highly trained Soldiers and aligning them with critical wartime unit vacancies. Retention system modernization is enhancing functionality, reducing maintenance costs, extending reach to deployed units via web technologies, and hardening systems against system, facility and infrastructure failures. These modernization efforts will greatly enhance the ability of the Army to maximize investments in our Soldiers and maintain unit readiness.

Continuum of Service (COS)

The Army will institutionalize personnel support for a lifetime of service. The key reason is flexibility in support of modular and tailorable forces. This includes formalizing the concept of "continuum of service" supporting fluid, progressive movement across Army components, including civilians and retirees, based on the needs of the Army and the individual. The COS program, jointly led by the Army G-1 and the Assistant Secretary of the Army (Manpower and Reserve Affairs) will enable the Army to meet operational readiness requirements by supporting requirements of the total Army team and will promote acquisition and maintenance of high-technology and other needed skills. Its focus will be recruiting, retention and transition/integration, and has an overall mission of maximizing human capital development for the Army.

New initiatives such as the "blue to green" program to transfer qualified U.S. Air Force (USAF) and U.S. Navy (USN) personnel downsized by their Service to the Army, and the 09L Arabic Translator Aide program are bringing needed skills to the Army and improving operational capabilities. Incentives will be developed and instituted to reward voluntary returns to active duty if needed after retirement from a traditional career of service. Personnel lifecycle management policies will allow all Soldiers to share flexibility in career management.

Changes in the operational environment are driving other COS initiatives. The RC is undergoing a new force generation that will enhance their operational readiness for the global war on terrorism. RC units will generally face a rotation of one year in a cycle of six years. The IRR is to be revamped and streamlined into a force of trained individuals associated with troop program units and more prepared for contingencies. Further, several thousand nonmilitary essential authorizations are to be civilianized through 2009 and systems put in place to retain qualified Soldiers who are departing active duty to fill those positions. COS is developing a new paradigm in personnel management to provide more flexibility in creating needed joint and expeditionary capabilities.

Compensation and Entitlements

The Army strongly supports maintaining an equitable and effective compensation package. A strong benefits package is essential to recruit and retain the quality and dedicated Soldiers necessary to execute the National Military Strategy. In recent years, the Administration and Congress have supported compensation and entitlements programs as a foundation of Soldier well-being. An effective compensation package is critical to efforts in the global war on terrorism as we transition to a more joint, expeditionary, unit-centered and cohesive force. The FY06 President's Budget continued to provide pay raises at Employment Cost Index plus 0.5 percent, which helps make the Army more competitive with the civilian sector. This equates to 3.1 percent for FY06.

The Army continues to improve housing opportunities for our Soldiers by eliminating average out-of-pocket housing costs by 2005, as reflected in the Basic Allowance for Housing program. This initiative improves the well-being of our Soldiers and families and contributes to a ready force by enhancing morale and retention.

The Army has undertaken a number of initiatives to provide special compensation for our Soldiers who serve their country under hazardous conditions, and we continue to look for ways to compensate our Soldiers for the hardships they and their families endure during time of war. In addition to supporting increases in hostile fire pay and family separation allowance, the Army has implemented numerous programs to encourage volunteerism while simultaneously improving unit readiness. The Army makes maximum use of assignment incentive pay to provide Soldiers the opportunity to serve in a variety of assignments. We will continue to emphasize fair and equitable compensation and benefits for our Soldiers and their families and develop new programs to address the dynamic environment of a transforming Army.

Likewise, we recognize the importance of providing competitive compensation for our 250,000+ civilian employees. A number of recruitment incentives and bonuses have been implemented to ensure that the Army continues to attract and retain highly qualified candidates. Full implementation of the National Security Personnel System will also increase compensation flexibility, allowing the Army to attract and retain the best and brightest.

The Army proposed and is currently implementing a waiver of the premium pay caps for civilian employees deployed in support the OEF and OIF. In addition, the Army initiated the Deployment Temporary Change of Station (DTCS) legislative proposal for Army civilians deployed to contingency areas. The legislation would standardize DOD civilian deployments with military deployments and would provide DOD civilians with logistical support entitlements not currently provided.

eArmyU

This award-winning online program revolutionizes education by eliminating barriers to post-secondary opportunity by providing anytime,

anywhere academic access across the Army. Initially fielded at Fort Campbell, Fort Hood and Fort Benning, more than 62,000 Soldiers have enrolled in eArmyU. More than 27,040 Soldiers have transitioned from post to post seamlessly accessing 148 degree programs at 29 regionally accredited colleges and universities. All eligible Soldiers receive tuition assistance, up to the established semester hour cap and ceiling, books, fees, an internet service provider account, an e-mail account, eArmyU "boot camp" tutorial, online academic tutoring and 24/7 help desk and technology support. Certain ranks of enlisted Soldiers may be eligible to receive an eArmyU laptop to complete their studies. Access to the cutting-edge eArmyU program is available to all eligible active duty enlisted, officers and active, Guard and Reserve Soldiers Army wide. Through eArmyU, all eligible Soldiers have an online capability to earn a degree without regard to duty hours, deployment schedule, or family issues.

Centralized Tuition Assistance Management (CTAM)

The Army Continuing Education System (ACES) has begun a two-phase project to automate and modernize business processes and provide Soldiers with virtual access on tuition assistance (TA) benefits anytime, anywhere. Phase A of this initiative began 1 October 2005 with the implementation of a centralized invoice process resulting in a more streamlined method for academic institutions to receive invoice payments. The second phase, scheduled for release on 1 April 2006, will allow Soldiers to request TA online and enroll in classes virtually through the GoArmyEd portal. The primary advantage to Army will be greater visibility and improved accuracy in management of TA dollars while providing Soldiers equal, 24/7 access to TA, irrespective of geographic location. CTAM will leverage the eArmyU business processes and is the first step toward implementing an ACES enterprise architecture.

Army Selection Board System (ASBS)

The Army Selection Board System (ASBS) is a fully operational, automated tool used by the U.S. Army HR and the Secretariat for Department of the Army Selection Boards to prepare, view and cast votes to candidates' files appearing before active duty officer promotion, command and school selection boards. It takes information once viewed in hard copy and microfiche and displays that information on computer screens. ASBS significantly improves the quality of documents viewed and streamlines the preparation of files and the selection process. ASBS was also used in the development of My Board File (MBF).

My Board File

My Board File is fully operational and is in use by the Army HRC to provide Soldier candidates the ability to validate and verify their board selection files online. Electronic certification replaces the requirement for signed Officer Record Briefs (ORBs)/Enlisted Record Briefs (ERBs). My Board File assists in providing quality files going before the U.S. Army Human Resources Command and the Secretariat for Department of the Army Selection Boards. My Board File is further being developed to provide a report mechanism for commanders and key personnel identifying Soldiers in their unit who have reviewed their board files. Future initiatives include an AKO interface to allow for a single entry point to choose or decline command preferences.

Army Well-Being

Providing for the well-being and quality of life of the Army family is a fundamental leadership obligation. Army Well-Being (AWB) holistically integrates and continuously assesses services and programs which provide for the needs of its people and supports senior leaders in determining priorities in support of their joint warfighting human capabilities requirement. Well-being programs and processes enable leaders to care for their Soldiers and families by balancing Army needs with individual needs.

The objective of AWB is to strengthen the **mental**, **physical**, **spiritual** and **material** condition of each Soldier, civilian and family. Through focused programs, services and initiatives the Army enables its people to achieve their individual goals while increasing and strengthening their collective preparedness. This ensures a prepared land power force in a constantly changing and transforming Army.

Consistent with these messages, AWB is now a component of the Army's Strategic Management System, identified as "Caring for Soldiers, Civilians and Families." Under that heading, we focus on lines of operation that support the overall well-being and quality of life of the Army's people. The areas in which we focus are:

- **Pay and Compensation.** Competitive compensation, complemented with financial training and programs to assist individuals in achieving their personal financial aspirations.
- **Health Care.** Quality, accessible, cost-effective health care services that promote healthy Army lifestyles, disease and injury prevention.
- **Housing and Work Environment.** The Army must establish and maintain an environment characterized by productive workplaces and quality, affordable housing for single Soldiers and Army families.
- **Family Support.** An environment that develops resilient Army families, connects families to the Army, and creates opportunities for family members to pursue employment and career opportunities.
- **Education and Development.** A system that promotes continuous personal and professional learning and development, provides sufficient educational opportunities for Soldiers and civilians, and addresses the unique individual needs of military family member students.
- **Cohesion.** Services and programs that contribute to cohesive units by building esprit, improving the welfare of Soldiers, civilians, and their families, and providing access to a wide spectrum of recreational activities that enhance individual developments.

Special Interest Initiatives (to include new programs, concept plans, etc., as they develop) AWB uses these interest areas to look holistically across the Army and to strategically assess how well the Army is taking care of its people. Though the well-being of our people happens in every community across the entire spectrum of the Army, our commitment to those who serve is evident: We must provide for the well-being and quality of life commensurate with the outstanding quality of service provided by our people. Additional information on Army Well-Being may be found at http://www.armywellbeing.org.

U.S. Army Wounded Warrior Program (AW2)

On 30 April 2004, the DA introduced the Disabled Soldier Support System (DS3). The program was redesignated the Army Wounded Warrior (AW2) program on 6 November 2005 to embody the Warrior Ethos. This program provides severely disabled Soldiers and their families with a system of advocacy and follow-up with personal support to assist them as they transition from military service to the civilian community. The AW2 program incorporates and integrates existing programs to provide holistic support services for our severely disabled Soldiers and their families throughout their phased progression from initial casualty notification to their return to home station and final destination. In addition, it is a system to track and monitor severely disabled Soldiers for a period of time beyond their medical retirement in order to provide appropriate assistance through an array of existing service providers. The program facilitates communication and coordination between severely disabled Soldiers and their families as well as pertinent local, federal and national agencies and organizations such as the Department of Veteran of Affairs, Department of Labor and many veterans' service organizations (VSOs). The Army's goal is for the AW2 program to work in concert with other key organizations to ensure our severely disabled Soldiers and their families are given the care, support and assistance they so rightly deserve for their selfless service and sacrifice to our nation. Soldiers and family members can learn more about the AW2 program by calling toll free, 1-800-833-6622, or by visiting the program's web site at http://www.ArmyDS3.org.

Army Mentorship

The Army's new mentorship strategy, "Leaving a legacy through mentorship" and corresponding AKO mentorship community aim to reemphasize and reinvigorate mentorship throughout the Army. The definition of mentorship for the Army is, "the voluntary developmental relationship that exists between a person of greater experience and a person of lesser experience that is characterized by mutual trust and respect." The focus of the Army's mentorship strategy is on mentorship beyond the chain of command. This strategy addresses all Army constituents (AC/RC Soldiers, DA civilians, spouses, retirees, veterans, cadets and contractors who have access to AKO). It provides online resources (AKO Mentorship Community [under Site Map, Army Organizations, Personnel, Mentorship]) easily accessible at http://www.armyg1.army.mil/hr/MRC.asp. Specifically, it provides over 125 tailored mentorship forums (for group mentorship) and a searchable mentorship profile server that enables individuals to search (by rank, race, gender, career field, duty location, etc.) for their own one-on-one mentor. The server currently hosts 518 registered users and 228 mentorship profiles (as of 5 December 2005).

Deployment Cycle Support (DCS) Program

The Army continues to execute the Deployment Cycle Support (DCS) to ensure Soldiers and families are better prepared and sustained throughout the deployment cycle. DCS provides means to identify Soldiers and families who need assistance with the challenges inherent in the deployment cycle; reintroduce Army personnel into preconflict environments; and facilitate reconstitution of Soldiers, DA civilians, families and the force. All levels of the chain of command must be involved to ensure DCS tasks are accomplished and documented for all Soldiers, including Army personnel deploying or deployed with other services.

Currently, the DCS process is conducted for three phases: redeployment, post-deployment and reconstitution. The redeployment phase occurs in theater for Soldiers and DA civilians with family members receiving reintegration training at home station. The post-deployment phase begins at home station for the AC and demobilization station for the RC. The reconstitution phase is conducted at home station for both AC and RC approximately 90 days after the redeployment. RC Soldiers who are released from active duty (REFRAD) are not required to attend drill for 60 days from their REFRAD date. Once they return to drilling status, they undergo the reconstitution phase.

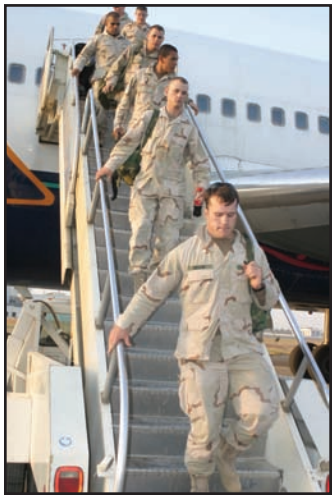
Training tools outlined in the DCS Directive are available on the DCS web site at http://www.armyg1.army.mil/hr/dcs.asp to assist units and commanders with accomplishing DCS tasks. DCS will continue to evolve as elements affecting the human dimension of readiness are refined. The immediate way ahead is to develop a holistic DCS process encompassing all phases of the deployment cycle to better prepare our total Army family for future operations.

To further assist Soldiers, DA civilians and family members, Military OneSource (MOS) (http://www.militaryonesource.com) a 24/7 toll-free phone line, provides information and referrals to include six face-to-face counseling sessions and crisis education materials. It is available to all AC, RC and deployed Soldiers, DA civilians and their families. The stateside number is 1-800-342-9647 and international number is 800-3429-6477.

On 10 March 2005, the Assistant Secretary of Defense for Health Affairs directed an extension of the current post-deployment health reassessment (PDHRA) of global health with a specific emphasis on mental health, three to six months into post-deployment. Recent field research indicates that health concerns, particularly those involving mental health, are more frequently identified several months following return from an operational deployment. The PDHRA screening process will ensure early identification and treatment of emerging mental health and other deployment-related health concerns.

Rest and Recuperation Program

On 23 September 2003, the Under Secretary of Defense, Personnel and Readiness (USD (P&R)) approved a Rest and Recuperation (R&R) Leave Program for personnel serving in the U.S. Central Command (USCENTCOM) area of responsibility (AOR) in support of OIF. USCENT-



COM also authorized personnel four days of off-duty "pass" to R&R locations throughout the theater in the Rest and Recuperation Pass Program. The R&R pass and leave programs are separate, yet complementary, programs. The underlying assumption is that rest and recuperation opportunities are vital to maintaining combat readiness and capability when units are deployed and engaged in intense, sustained operations. These opportunities increase operational effectiveness as the effects of prolonged combat stress and family separation are mitigated.

On September 25, 2003, USCENTCOM initiated the R&R Leave Program for all active and reserve component service members and DOD civilians deployed on 12-month tours of duty. The R&R Leave Program provides eligible individuals two weeks of chargeable leave between their third and 11th month in theater.

On 29 September 2003, OSD designated the Army as the Executive Agent (EA) for the USCENTCOM AOR R&R Leave Program in the areas of policy, programming and budget. OSD also approved the designation of three additional aerial ports of debarkation (APODs): Atlanta, Dallas/Fort Worth and Los Angeles. Effective 19 December 2003, OSD implemented fully funded onward travel for R&R leave participants, in which they receive round-trip tickets from the AOR to the commercial airport nearest their leave destinations.

On 21 June 2004, OSD implemented retroactive reimbursement, whereby approximately 40,000 service members who traveled on R&R leave during the period 25 September through 18 December 2003, could be reimbursed for their travel expenses. As of 5 January 2006, Defense Finance and Accounting Service (DFAS) has paid $779,389 for 3,623 claims for reimbursement.

Operational requirements and service member preference are factors in determining which individuals participate in the R&R Leave Program at a given time. Prior to their departure for R&R leave, commanders conduct briefings with participants that include modified deployment cycle support tasks such as risk assessment, medical, reunion/reintegration and suicide prevention. Tasks at the gateways include customs screening and finalizing onward travel arrangements to facilitate individual R&R leave plans.

The program reached a milestone on 26 August 2004 with the 100,000th R&R participant, and the 250,000th R&R participant milestone was reached on 22 August 2005. As of 25 January 2006, the program had provided R&R leave opportunities for over 300,000 participants.

Army Retirement Services

Established to ensure that Soldiers and family members are provided the very best advice in preparation for retirement and to further ensure that retired Soldiers and their families or survivors are taken care of in their post retirement years, Army Retirement Services provides policy oversight and frequent

guidance to the installation Army Retirement Services offices worldwide. To support more retiring and retired Soldiers and families with smaller installation retirement services staffs, the Retirement Services Program uses web-enabled tools. Soldiers and family members can start preparing for retirement through the Army Retirement Services' homepage at http://www.armyg1.army.mil/retire. Further, the law dictates that the Survivor Benefit Plan (SBP), authorized by Congress in 1972, be publicized and managed by properly trained counselors at installation level. Recent changes in law that affect active duty deaths make it even more important that SBP counseling is delivered at installation level. The 2005 National Defense Authorization Act (NDAA) improved the SBP annuity structure and directed conduct of an open enrollment period. This made regular communication with retired Soldiers and families both at the HQDA and installation levels even more vital. HQDA promulgates such information through *Army Echoes,* the official bulletin for the retired Soldier, and the Retirement Services web site. In addition, each Army installation is required by *Army Regulation 600-8-7, Retirement Services Program*, to host a Retiree Appreciation Day annually, both to honor and serve those who have served and to provide them with updates on a myriad of topics.

AR 600-8-7 also stipulates that HQDA periodically publish *Army Echoes* to keep retirees and their families informed of any changes to laws, procedures and policies, and to furnish them a wide variety of helpful information on what the Army can do for them and what they can do for the Army. As the Army's retired and annuitant population approaches the one million mark, it is vital to be able to flow information to all parts of our personnel base. In addition to publishing *Army Echoes* three times per year and, in an effort to make information more accessible and cost efficient, Army Retirement Services uses its web page to electronically provide updates to retired Soldiers on a regular basis. These updates include electronic copies of *Army Echoes* and a frequently updated current news section. Thus far, over 8,000 retired Soldiers have volunteered to receive *Army Echoes* by e-mail in lieu of receiving hard copy mail mailings.

Army Retirement Services also supports the 14-member CSA Retiree Council that meets each April for one week. That meeting is followed by a mid-year update to the CSA each October. This formal report, briefed to the CSA at the close of the April meeting, is available at http://www.armyg1.army.mil/rso/retireecouncil.asp.

On 14 November 2005, the Army marked the 50th anniversary of the Army Retirement Services program. Without question, Army Retirement Services, both at HQDA and at the installation level, remains a vital part of the personnel life cycle and must be maintained as a part of the modernization of our Army.

Army Career Alumni Program (ACAP)

An integral element of the Army personnel life cycle, the ACAP is the Army's comprehensive transition program for Soldiers, DA civilians and their family members. The program includes pre-separation counseling, benefits counseling, job search training and employment assistance. Federal law requires the Services to provide transitioning service members with preseparation counseling no later than 90 days prior to separation or retirement date, inform them about the Verification of Military Experience and Training (VMET) document and establish permanent employment assistance centers. ACAP partners with internal Army service providers as well as the Departments of Defense, Labor and Veterans Affairs to offer the best possible transition services available.

The ACAP web site at (http://www.acap.army.mil) provides information on the location of the 53 ACAP centers, types of services offered by each center, listing of ACAP job fairs and job opportunities posted by private sector employers and federal and state agencies.

ACAP also supports mobilized RC Soldiers by delivering the mandatory pre-separation counseling and follow-on services at the time of demobilization.

ACAP makes a difference to Soldiers, not only those who use the program, but those who continue to serve in the Army. Knowing that ACAP will be available to them when it is their turn to leave, serving Soldiers are more dedicated to the Army as a result of the positive effect the program has on their departing fellow Soldiers. ACAP has a strong linkage with the Army's recruiting program by providing a reassurance to potential recruits and families that the Army takes care of their sons and daughters when they have finished serving their country. ACAP is relevant and good for all who serve in our Army.

Army Center for Substance Abuse Programs (ACSAP)

The ACSAP has developed and promulgated the Risk Reduction Program (RRP) to assess the level of high-risk behaviors Soldiers are exhibiting in the form of substance abuse, suicide, spousal/child abuse, AWOL, crimes against persons/property, driving while intoxicated, injuries/accidents, sexually transmitted diseases and financial indebtedness. The RRP is a very efficient way of providing commanders data and information about high-risk behavioral problems in their units. Once high-risk issues are identified, commanders may request installation resources to assist in reducing or preventing future high-risk behaviors. The program focuses on effective use of installation resources and coordinated efforts between commanders and installation agencies to implement effective interventions. Because the RRP integrates information and installation human services program efforts, it is an important support system for the Army well-being initiative. RRP has also been incorporated into the Deployment Cycle Support program. Because of the program's popularity and success with senior mission commanders, the RRP will become a formal and mandatory program in FY06. When fully implemented, the RRP will directly contribute to Force Stabilization by enhancing Soldier personal readiness and reducing first-term attrition.

Equal Opportunity Program

The Equal Opportunity (EO) Program formulates, directs and sustains a comprehensive effort to maximize human potential and to ensure fair treatment for all persons based solely on merit, fitness and capability in support of readiness. Commanders are responsible for sustaining a positive command climate within their units that fosters unit cohesion. The guidance for this program is found in *AR 600-20, Army Command Policy,* Chapters 6 and 7. Further information on training, directives and DOD EO events and special observances can be found at http://www.armyg1.army.mil/eo/default.asp.

The goals of the EO program are to provide EO for military personnel and family members on and off the installation within the limits of the laws of localities, states and host nations; create and sustain effective units by eliminating discriminatory behaviors or practices that undermine teamwork, mutual respect, loyalty and shared sacrifice of the men and women of America's Army; provide EO and fair treatment for military personnel, family members and DA civilians without regard to race, color,

gender, religion or national origin; and provide an environment free from unlawful discrimination and offensive behavior.

Sexual Assault Prevention and Response (SAPR) Program

The Army developed a victim-centered Sexual Assault Prevention and Response (SAPR) program that reinforces the Army's commitment to eliminate incidents of sexual assault and respond to those that are reported through a comprehensive approach that centers on awareness and prevention, training and education, victim advocacy, response, reporting and follow-up. The implementing guidance for this program is found in *AR 600-20, Army Command Policy.* The program promotes sensitive care and confidential reporting for victims of sexual assault and accountability for those who commit these crimes. Victim advocacy is the centerpiece of the Army's program. It includes a restricted reporting option that allows a victim to confidentially disclose details of an assault to specifically identified individuals and to receive medical treatment and counseling without triggering the official investigative process. The Army's program also includes expanded response services and guidelines for establishing and conducting monthly Sexual Assault Review Boards (SARB) in garrison and in theater. Under the Army's program, a victim's use of advocacy services is optional; however, commanders must ensure that victims have access to a well-coordinated, highly responsive sexual assault victim advocacy program that is available 24 hours per day, 7 days per week, in both garrison and deployed environments. There are three types of advocacy services in garrison: the installation Sexual Assault Response Coordinator (SARC), Installation Victim Advocate (IVA) and Unit Victim Advocates (UVA). The SARC is responsible for coordinating local implementation of the program. The IVA works directly with the SARC, UVAs and other installation response agencies to provide direct assistance to victims. The UVAs are Soldiers or government civilians assigned at battalion or higher levels who are trained to provide victim advocacy as needed. Two types of advocacy services exist in deployed environments: the deployable SARCs (DSARCs) and UVAs. The DSARCs are Soldiers or government civilians who are trained and responsible for coordinating the SAPR program in a particular area of the deployed theater. Generally, DSARCs are assigned at brigade or higher headquarters. The UVAs assist the DSARC; they are Soldiers or government civilians trained to provide victim advocacy at battalion-level units in a theater of operations. The Army developed an extensive, progressive and sequential training program that has specific key roles and responsibilities for Soldiers, leaders, policy makers and responders. This training supports an aggressive prevention and response program, ensuring victims of sexual assaults are protected, treated with dignity and respect, and provided support, advocacy and care. The Army strongly supports effective command, law enforcement and criminal justice activities that will maximize accountability and prosecution of sexual assault perpetrators.

Army policy promotes sensitive care for victims of sexual assault and accountability for those who commit these crimes. Specifically, the goals of the SAPR program are to:

- Create a climate that will prevent sexual assault in the Army
- Create a climate that will encourage victims to report incidents of sexual assault without fear of reprisal

- Establish sexual assault training and awareness programs to educate Soldiers and leaders
- Ensure the sensitive, confidential and comprehensive treatment of victims
- Ensure leaders understand their roles and responsibilities in response to sexual assaults and thoroughly investigating allegations of sexual assault

MANPRINT Program

Tomorrow's battlefield will be a complex environment filled with new equipment and technologies. Real battlefield effectiveness results from a good match between the people who operate and maintain the equipment and the equipment itself. At the heart of the Army Vision are well-trained Soldiers, using state-of-the-art equipment to win wars. The Army's program to ensure that Soldier issues are key considerations in system design, development and acquisition is called MANPRINT. The objectives of MANPRINT are to (1) optimize both the quantity and quality of the personnel needed for systems; (2) design systems that are easily usable by Soldiers, safe to operate, cause no unnecessary health problems and maximize Soldier survivability; and (3) ensure acceptable trade-offs are made among performance, design and Soldier issues.

MANPRINT's Strategic Value to the Army

The MANPRINT process employs task and functional analyses and modeling to best determine personnel efficiency in operating and maintaining systems. The analyses—matched with the relevant personnel attributes and well-planned training—yield optimal manpower allocations per system. Because early design decisions are so critical to lifecycle costs, MANPRINT must be employed early in a system's developmental cycle to maximize out-year operational and support savings. The continual improvement in MANPRINT techniques and tools relies on adequate funding of additional Soldier-oriented research and development. As we continue to push the envelope for battlefield dominance through technology advancements and innovations, we must ensure that the Soldier remains the centerpiece of our formation.

U.S. Army Research Institute for the Behavioral and Social Sciences (ARI)

ARI's mission is to maximize individual and unit performance and readiness to meet Army operational requirements through research in the behavioral and social sciences. Our program in personnel, training and leader development research covers the total life cycle of the Soldier and provides the foundation to select, assign, promote and retain the highest quality Soldiers; train and develop them to keep pace with technology and changing mission demands; and quickly develop leaders with the conceptual and interpersonal skills to lead the future force.

Future ARI research in personnel will improve officer accession and retention policy, improve enlisted attrition management, recommend future Soldier selection and classification systems and support future Unit Focused

Stabilization. In training, ARI's future research will develop prototype methods and tools to train battle commanders to effectively operate in network-enabled environments; provide methods that will enable and leverage the potential of simulation, and virtual and game environments for maximum training benefit; and develop techniques to provide more effective and timely feedback, coaching and mission rehearsal. Future ARI leader research is developing tools that can be used to develop the fundamental skills (critical thinking, interpersonal relationships and self-awareness) that leaders need to be adaptable and flexible. These tools are teaching leaders how to think; not what to think. In addition, research is focusing on methods and techniques to speed the process of leader development so junior leaders can be better prepared to handle the requirements and situations they face now in the operational environment, and stay well prepared as the pace and requirements of fighting future missions unfold. The rapid operational tempo, internal transformational changes and technology insertions going on now and envisioned for the future will challenge Soldiers and leaders physically and mentally. This will require the Army to maximize their human capabilities—ARI is performing the research to help them do that and to remain trained, ready and relevant.

Conclusion

To remain relevant and ready, today and tomorrow, the Army must continue to recruit and retain the right Soldiers and civilians, processes that support a lifetime of service, and ensure the human dimension is considered in the development of new systems and equipment. Of utmost importance, we must stay focused on supporting commanders in the field by ensuring they have the right people with the right skills in the right place at the right time and the personnel systems to enhance warfighting capability and agility. Ultimately, the success of transformation will be realized only if the personnel community remains alert to the current and future needs of our most valuable asset—People.

Annex F: Facilities

Introduction

As the Army continues with the largest stationing action in modern history, we must ensure that Soldiers are provided with the facilities and infrastructure to support a technologically robust, expeditionary Army. As the demands of a transforming an Army at war compete for available resources, implementation plans must be synchronized and coordinated to avoid costly delays or arrival of equipment before they are ready to be housed, maintained, trained or sustained. The Office of the Assistant Chief of Staff for Installation Management (OACSIM) and its executing agents, the Installation Management Agency (IMA) and the U.S. Army Corps of Engineers (USACE), continue to refine and seek innovative solutions to ensure we properly identify and validate our installation requirements. We have embarked on several initiatives to meet warfighter needs and developing "flagship installations." The objective is to enhance the ability to project power and sustain an expeditionary Army while supporting families in safe environments.

The installation management family remains committed to the three essential tasks developed last year, just as Army leadership remains committed to ensuring that the resources needed are identified and prioritized. We continue to refine our essential tasks of (1) developing strategies posturing installations as deployment platforms with robust, technology-rich reach capabilities; (2) adjusting installation support and resource priorities to meet the needs of a transforming Army at war; and (3) maintaining the support and well-being of all Soldiers and their families.

The Army has significantly changed the role of installations as it supports commanders, Soldiers, their families and our civilian employees. The integrated, collective capabilities and capacities of installations, including other Services within a given geographic region, will be linked and far exceed what any one installation can provide.

As the Army implements fundamental changes in force structure, spiral technology insertion, and business processes, our installations will adapt to changing needs and priorities. We are exploring methods that can be adopted for faster construction to reduce the impact on Soldier and unit readiness. We are also taking a longer view of future force requirements to further reduce the need for retrofit construction through flexibility and reconfigurability of facilities.

Modernized facilities of the future will also be digitally enabled, providing unprecedented connectivity. Training provided by these digital facilities support embedded and distributed training technologies, thereby reducing the cost of travel and lodging at schools. The same technologies support reach operations, thus reducing the deployed force footprint as well as mission planning and rehearsal. The latter provides the greatest survival opportunity for our Soldiers by minimizing tactical surprises or delays in engaging the enemy decisively through superior situational awareness.

At the same time, installations provide quality services to ensure the well-being of Soldiers and their families. Providing these services to both our active and reserve component families extends beyond traditional installation

boundaries or fences as we develop these in concert with surrounding communities.

Installation Strategy and Objective

All installations serve a vital role in maintaining and sustaining an expeditionary Army ready to meet the Army's mission across a broad spectrum of contingencies. However, not all installations are geographically or economically suited to meeting a broad range of capabilities, characteristics, or capacities on a single installation; nor should they. This is especially true given the magnitude of change the combined effects of modular force fielding, restationing our forward-deployed forces under our Global Posturing Initiative, and the results of Base Realignment and Closure. We continue to build on each installation's own unique strength, capability, or capacity to meet an operational or mission function, or its proximity to key or critical support nodes.

The Army intends to harness this individuality or diversity by aggressively implementing facility modernization through several Army initiatives like the Focused Facility Strategy and Residential Communities Initiative (RCI). Additionally, integrating installation services with the surrounding community develops an even stronger environment of civil-military community relations. The objective is to develop and transform into a system of installation capabilities and resources to support a CONUS-based projection of forces.

There are three major thrust areas to achieve these goals.

- OACSIM is a firm supporter of the emerging partnership between industry and USACE in order to improve our military construction (MILCON) response times as well as our facilities standardization and criteria development. Our installations must support a mix of current and future forces over the next few decades. The technological maturity of these units must support the extended battlespace between installations, from home station to foxhole. Minimizing the impact and distractions on Soldier and unit readiness associated with construction is an imperative. By decreasing the time it takes to build facilities, we reduce construction impacts. Should construction time lines be reduced to the period when Soldiers are on rotation, the impact becomes transparent to the Soldier and their unit.

  Employing adaptive, modular, multipurpose facility designs further reduces the potential construction impact on Soldiers and their units. To the maximum extent feasible, these designs can adapt to change or support multiple functions with little to no modification. Multipurpose, adaptive facility and facility complex designs will provide support to consolidated functions such as maintenance, training, and logistics in a single complex. Single-purpose facility designs will be provided by exception as the Army migrates to the future force. Installations will no longer adopt the one-size-fits-all posture. The approach being used simultaneously incorporates life-cycle investments thereby minimizing the need for retrofit and provid-

ing the most functionality and operability possible.

CONUS-based installations will continue to support a mix of current and future forces for the next few decades. From a regional perspective, as more installations transition to totally future force unit stations with each technology insertion spiral, facility support requirements (say logistics or warehousing) or missions may be reallocated to other locations within a geographic region to reduce some of the facility maintenance and repair demands. At some installations, the combined use of regional assets and recovery of excess facilities can also reduce cramped conditions, thereby improving both the operational posture of the units stationed there and the quality of life or well-being of the Army family on post.

- OACSIM and IMA continue to refine policies, strategies, and priorities to implement aggressive transformation of installations while meeting the war on terrorism. The Army's Installation Information Infrastructure Architecture (I3A), will provide the seamless connectivity to the Global Information Grid that Army and Joint Force commanders must have to meet the full spectrum of operations. This common information architecture will also link all installations to each other. Commanders at home station and in the field will have access to joint, interagency, and multinational support infrastructures worldwide. Installations will enable mission accomplishment by simultaneously providing the means of reducing the in-theater footprint of deployed forces and enhancing the commander's tool kit by providing vital information hubs, deployment platforms, and sustainment bases.

  Training centers provide unique capabilities to conduct integrated live, virtual, and constructive (LVC) training for combined arms and collective training tasks. Simultaneously linking these capabilities to home station installations serves as a training multiplier that offers a larger training experience than any one installation can provide by itself. The introduction of Operational Readiness Training Complexes (ORTC) will connect the Reserve and Active Components at key locations, adding to the robust training environment of the future. Digitally enabled training facilities and equipment will provide the flexibility for Soldiers, units and command staffs to train from geographically separate locations in a synthetic environment, thereby optimizing training opportunities and increasing readiness.

- Through detailed and regular coordination with Army Staff proponents and major commands, OACSIM is synchronizing decisions and implementation milestones in a unified effort. Having the right installation infrastructure and facility mix at the right place and time is vital to continued Army readiness and modernization. Moreover, the Army requires modern, web-enabled capabilities to manage, as well as provide

support across, the doctrine, organization, training, materiel, leader development and education, personnel, and facilities (DOTMLPF) domains.

Hence, the Army installation transformation environment requires changes in business processes, policies, and installation management structure. The primary thrust for this is the development of policies and programmatic strategies that support validation and verification of facility and infrastructure requirements. Synchronizing the myriad of stationing and fielding time lines across all DOTMLPF domains is essential to minimize distractions on Soldiers and disruptions to families, and to implement an orderly transition to flagship installations.

Living and Working Environments

Achieving a balance between the dependence upon installations during reach operations and as hubs for accessing knowledge centers demands higher levels of security and protection. The threat environment (e.g., terrorism, biohazards, computer hacking) facing Soldiers, their families, Department of the Army civilians and contractors on an installation will require full-dimensional protection.

We are improving our access control points for all installations to aggressively meet the realities of today's anti-terrorism and force protection needs. Installations will explore concepts incorporating advanced technologies such as biometrics; smart cards; entity tracking; networked sensors; chemical, biological, radiological, nuclear and high-yield explosives (CBRNE); and weapons or munitions detection capabilities. These security capabilities will be linked to local, state and federal law enforcement activities, enhancing responsiveness and increasing survivability. Emerging and advanced technologies such as sensors and detectors will enhance the installation's security posture without resorting to an entrenchment environment. The security posture of installations is less intrusive as the aesthetics remain attractive while belying the actual protection level of the installation. When services are integrated within the surrounding community, security considerations may extend beyond the installation boundary to the extent feasible.

Significant attention has also been focused on Soldiers' barracks this past year. The latest barracks standard provides greater space and privacy along with telephone and cable-ready receptacles. The connectivity provided offers Soldiers an opportunity to continue their skills training or education at their own pace and intensity. New or renovated barracks also

contain higher-quality furniture, more washing machines and clothes dryers, and increased parking along with greater open space and outdoor recreational facilities.

Between FY94 and FY04, the Army invested more than $6 billion in the Barracks Modernization Program. This investment has provided more than 100,000 modernized barracks spaces. Through the whole barracks renewal program and the barracks upgrade program, the Army awarded 21 projects valued at more than $697 million. We are completing plans for additional barracks projects valued at approximately $4 billion more by 2008.

Family housing areas are also undergoing major change. The Army's goal is to eliminate all inadequate military family housing using a combination of traditional military construction, basic allowance for housing increases and privatization.

The RCI is probably the most visible change on our installations. The RCI plan includes 45 installations (grouped into 35 projects), with 84,000 houses—more than 92 percent of the Army family housing inventory in the United States.

Twenty-one installations or more than 50,000 homes made the transition to privatized operations. Projects for 10 more installations totaling 16,000 homes have been awarded for FY06. The Army will use $572 million of appropriations and obtain $7.7 billion of private capital to construct/renovate housing for these 31 installations. An additional 14 installations are either in solicitation or under development, involving close to 18,000 homes.

Installations and communities will become increasingly integrated and mutually supportive. Regional, city, and installation master planners will work together to leverage common infrastructure and services to create mutual benefits and decrease operating costs. Surrounding communities may provide medical, dependent education, recreational or emergency services to mitigate lack of on-post capabilities. Civilian and military communities may augment each other in mutual support agreements, thereby maximizing resource investments within a community or region. As these services are integrated within the surrounding community, security considerations may extend beyond the installation boundary.

Environmental strategies, land use and stewardship continue to be more fully integrated into mainstream installation management practices, business processes, and base support services both on post and in coordination with state and local governments. Common and mutually supportive goals in land use and environmental considerations become less divisive as perspectives and appreciation for the benefits of close community ties outweigh the occasional disadvantages of close proximity to military installations.

Installation Management

Three years into the inception as a field operating agency of the OACSIM, the IMA provides a corporate-focused structure for ef-

ficient and effective installation management worldwide. At the garrison level, IMA has implemented a standard garrison organization to ensure quality services and representation are provided at each installation. Management of programs to sustain quality installations, family support, and the well-being of the entire Army family provides the peace of mind for deployed Soldiers that their families are secure and cared for in their absence. The IMA relieves operational commanders from the time-consuming tasks of running an installation and managing the delicate balance of operational resources and training with infrastructure and facilities sustainment.

For Soldiers and their families, installations are configured to provide the same quality of life as is afforded the society they are pledged to defend. The past practice of accepting risk in infrastructure to maintain warfighting readiness has resulted in more than a decade of chronic underfunding. The Army's senior leadership approval and commitment to implement the "90/90" initiative will substantially increase sustainment and operations resources to levels that eliminate the need to mortgage the future and take significant risk in our facilities and infrastructure. It has taken several decades to get where we are, and we will not overcome overnight the impact of shortfalls over the years. However, the recognition of need and implementation of "90/90" assures Soldiers, their families, and our civilian work force that we can and will improve the living and working environments on our installations.

The Army continues to make progress in rectifying shortfalls and inadequacies and applying more effective business practices and levels of support, largely the result of consolidating installation management under a central organization. We will build upon our successes and identify refinements for those that may still achieve more productivity. Over the past few years, the administration and Congress have consistently supported these efforts, and there is no indication that will change.

Conclusion

The role of Army installations in sustaining a premier, expeditionary Army continues, as does the definition of flagship installations. While Army modernization evolves as technology is placed into the hands of Soldiers, so will installations. The installation management community is committed to providing effective facilities for training, mobilizing and deploying the force; sustaining and reconstituting the force; and taking care of our families.

We will meet the criticality of need and duration of support necessary to ensure deployed forces are fully supported across the Army mission spectrum. Through the use of multipurpose, adaptive facility standards with appropriate levels of connectivity and flexibility to accommodate technology insertion, we will provide the robust platforms needed to meet global commitments.

Installations exist to support the warfighters and their continued well-being. The installation management community remains dedicated to meeting the challenge of providing quality, mission-ready installations.

Acronyms

A2C2	Army Airspace Command and Control
A2C2S	Army Airborne Command and Control System
A2SF	Active Army Strength Forecaster
AAFARS	Advanced Aviation Forward Area Refueling System
AAMDC	Army Air and Missile Defense Command
AAO	Authorized Acquisition Objective
AAR	after action review
ABC-C	Army Benefits Center–Civilians
ABCS	Army Battle Command System
ABT	air-breathing threat
AC	active component
ACA	Joint Airspace Control Authority
ACAP	Army Career Alumni Program
ACAT	acquisition category
ACE	analysis and control element
ACES	Army Continuing Education System
ACIP	Aircraft Component Improvement Program
ACIS	Aircrew Integrated Systems
ACP	Army Campaign Plan
ACR	armored cavalry regiment; Army Capability Review; Aerial Common Sensor
ACSAP	Army Center for Substance Abuse Programs
ACTD	Advanced Concept Technology Demonstration
ACTEDS	Army Civilian Training, Education and Development System
ACTF	Army Constructive Training Federation
ACUS MP	Area Common User System Modernization Plan
ADA	Air Defense Artillery
ADAM	Air Defense and Airspace Management
ADOCS	Automated Deep Operations Coordination System
ADSAM	air-directed, surface-to-air missile
ADSI	Air Defense System Integrator
AEC	Army Equipping Conferences
AFATDS	Advanced Field Artillery Tactical Data System
AG	Adjutant General
AGL	above ground level
AGSE	Aviation Ground Support Equipment
AITR	Army Information Technology Register
AKM	Army Knowledge Management
AKO	Army Knowledge Online
AL&T	Acquisition, Logistics and Technology
ALMS	Army Learning Management System

ALO	Authorized Level of Organization
ALS	Analytical Laboratory Suite
AMC	Army Materiel Command
AMCB	Army Marine Corps Board
AMD	air and missile defense
AMDBL	Air and Missile Defense Battle Lab
AMDPCS	Air and Missile Defense Planning and Control System
AMDWS	Air and Missile Defense Workstation
AMF	Army modular force
AMI	Adaptive Medical Increment
AMP	Aviation Mission Planning Workstation
AMPS	Aviation Mission Planning System
AMRAAM	Advanced Medium-Range Air-to-Air Missile
ANCOC	Advanced NCO Course
AOA	Analysis of Alternatives
AOB	Advanced Operating Base
AOR	area of responsibility
AP	anti-personnel
APAM	anti-personnel, anti-materiel
APKWS	Advanced Precision Kill Weapon System
APL-A	Anti-Personnel Land Mine Alternative
APMS	Army Portfolio Management System
APOD	aerial port of debarkation
APS	active protection systems; Army prepositioned stock; Automated Pump Station
AR2B	Army Requirements and Resourcing Board
ARFORGEN	Army Force Generation
ARH	Armed Reconnaissance Helicopter
ARI	U.S. Army Research Institute for the Behavioral and Social Sciences
Army eHRS	Army Enterprise Human Resources System
ARNG	Army National Guard
AROC	Army Requirements Oversight Committee
ARPL	Army Resourcing Priorities List
ARSOF	Army Special Operations Forces
ARSTRAT	Army Strategic Forces
ARV	Armed Robotic Vehicle
ASA(ALT)	Assistant Secretary of the Army for Acquisition, Logistics and Technology
ASARC	Army System Acquisition Review Council
ASAS	All Source Analysis System
ASAS-L	All Source Analysis System-Light
ASBS	Army Selection Board System
ASCC	Army Service Component Command
ASE	Aircraft Survivability Equipment
ASIP	Advanced System Improvement Program
ASNRDA	Assistant Secretary of the Navy, Research, Development and Acquisition

ASPG	Army Strategic Planning Guidance
ASTAMIDS	Airborne Surveillance, Target Acquisition, and Minefield Detection System
ASV	Armored Security Vehicle
AT	anti-tank; annual training
ATA	automatic target acquisition
ATACMS	Army Tactical Missile System
ATCCS	Army Tactical Command and Control System
ATD	Advanced Technology Demonstration
ATEC	Army Test and Evaluation Command
ATGM	Anti-tank Guided Missile
ATIA	Army Training Information Architecture
ATLAS	All-Terrain Lifter Army System
ATNAVICS	Air Traffic Navigation, Integration, and Coordination System
ATS	Army Targetry System
ATSC	Army Training Support Center
AV	air vehicle
AVCATT	Aviation Combined Arms Tactical Trainer
AW	Air Warrior
AW2	Army Wounded Warrior Program
AWACS	Airborne Warning and Control System
AWB	Army Well-Being
AWIS	Aircraft Wireless Intercom System
AWPB	Army War Production Board
AWS	airspace workstation
AWSS	Aerial Weapons Scoring System
BA	battlespace awareness
BAT	Biometric Automated Tool
BAWS	Biological Aerosol Warning Sensor
BAX	Battle Area Complex
BBS	Brigade Battle Simulation
BCIS	Battlefield Combat Identification System
BCS3	Battle Command Sustainment Support System
BCT	Brigade Combat Team
BCTC	Battle Command Training Center
BCTP	Battle Command Training Program
BDA	battle damage assessment
BES	Battle Effects Simulator
BEST	Business Enterprise Solutions Trainee
BFN	Bridge-to-the-Future Network
BfSB	Battlefield Surveillance Brigade
BFT	Blue Force Tracking; binary file transfer
BFV	Bradley Fighting Vehicle
BICC	Brigade Intelligence and Communications Company
BIDS	Biological Integrated Detection System
BLOS	beyond-line-of-sight

BMD	Ballistic Missile Defense
BMDS	Ballistic Missile Defense System
BMMP	Business Management Moderation Program
BNCOC	Basic Noncommissioned Officer Course
BOLC	Basic Officer Leader Course
BOS	Budget Operating System
BRAC	Base Realignment and Closure
BTID	Battlefield Target ID Device
BW	biological warfare
C/MHE	Container/Material Handling Equipment
C2	command and control
C2M	Command and Control Module
C3I	command, control, communications, and intelligence
PEO C3T	Program Executive Office Command, Control and Communications Tactical
C4	command, control, communications, and computers
C4I	command, control, communications, computers and intelligence
C4I2	command, control, communications, computers, information and intelligence
C4ISP	C4 Integrated Support Plan
C4ISR	command, control, communications, computers, intelligence, surveillance and reconnaissance
CA	civil affairs
CAB	combat aviation brigade
CAC-T	Combined Arms Center, Training
CALFEX	combined arms live-fire exercise
CALL	Center for Army Lessons Learned
CAN	capabilities needs analysis
CAP	Combined Aggregate Program
CAPT	Civil Affairs Planning Team
CAT	Civil Affairs Team
CATS	Combined Arms Training Strategy
CATT	Combined Arms Tactical Trainer
CB	chemical/biological
CBCSE	Common Battle Command Simulation Equipment
CBM	condition-based maintenance plus
CBMS	Chemical Biological Mass Spectrometer
CBPSS	Chemical Biological Protection Shelter System
CBRN	chemical, biological, radiological and nuclear
CBRNE	chemical, biological, radiological, nuclear and high-yield explosive
CBT	Common Bridge Transporter
CCF	Course Correcting Fuze
CCID ACTD	Coalition Combat Identification Advanced Concept Technology Demonstration
CCJO	Capstone Concepts for Joint Operations

CCS	Command Center System
CCTT	Close Combat Tactical Trainer
CDD	Capability Development Document
CDI	classification discrimination and identification
CE	chemical energy
CEaVa	continuous early validation
CEP	circular error probable
CES	Civilian Education System
CFFT	Call for Fire Trainer
CFLCC	Coalition Forces Land Component Command
CFO	Chief Financial Officer
CGA	Common Gunnery Architecture
CGF	Computer Generated Force
CGS	Common Ground Station
CGSOC	Command and General Staff Officer Course
CHIMS	Counterintelligence/Human Intelligence Information Management System
CHS	combat health support
CI	counterintelligence
CID	combat Identification
CIM	Civil Information Management
CIP	combat identification panel
CITV	commander's independent thermal viewer
CIV	commander's independent viewer
CIVFORS	Civilian Forecasting System
CJCS	Joint Chiefs of Staff
CK	Containerized Kitchen
CLAWS	Complementary Low-Altitude Weapons System
CLOE	common logistic operating environment
CLU	container launch unit; command launch unit
CM	cruise missile
CMD	cruise missile defense
CMOC	Civil-Military Operations Center
CMTC	Combat Maneuver Training Center
CMWS	Common Missile Warning System
COCOM	Combatant Commander
COE	contemporary operating environment; common operating environment
COMINT	communications intelligence
CONOPS	concept of operations
CONUS	continental United States
COP	common operational picture
COS	Continuum of Service
COTS	commercial off-the-shelf
CP	command post
CPAC	Civilian Personnel Advisory Center
CPD	Capabilities Production Document

CPIC	Capital Planning and Investment Control
CPOC	Civilian Personnel Operations Center
CPOF	Command Post of the Future
CPP	Command Post Platform
C-RAM	Counter-Rocket, Artillery and Mortar
CRD	Capstone Requirements Document
CREW	Counter RCIED Electronic Warfare
CRI	Cost Reduction Initiative
CS	combat support
CSA	Chief of Staff, Army
CSB(ME)	Combat Support Brigade (Maneuver Enhancement)
CSC	Convention for Safe Containers
CSS	combat service support
CSSTSS	Combat Service Support Training Simulation System
CTAM	Centralized Tuition Assistance Management
CTC	Combat Training Center
CTIA	Common Training Instrumentation Architecture
CV	Commander Vehicle
CVE	common virtual environment
CWA	chemical weapon agent
DA	Department of the Army
DAART	Digital After Action Review Tool
DAB	Defense Acquisition Board
DAE	Defense Acquisition Executive
DAFCS	Digital Automatic Flight Control System
DAGR	Defense Advanced GPS Receiver
DARP	Deployable Range Packages
DARPA	Defense Advanced Research Projects Agency
DBSMC	Defense Business Systems Management Committee
DBST	Digital Battlestaff Sustainment Trainer
DCGS-A	Distributed Common Ground System-Army
DCIIS	Defense Counterintelligence Information System
DCS	Deployment Cycle Support
DDTC	deployed digital training campus
DERF	Defense Emergency Response Fund
DFAS	Defense Finance and Accounting Service
DIMHRS	Defense Integrated Military Human Resources System
DIS	Distributed Interactive Simulation
DISA	Defense Information Systems Agency
DISN	Defense Information Switched Network
DITSCAP	DOD Information Technology Security Certification and Accreditation Process
DL	Distributed Learning
DLA	Defense Logistics Agency
DLAMP	Defense Leadership and Management Program

DM	designated marksman
DOCEX	document exploitation
DOD	Department of Defense
DOTMLPF	doctrine, organization, training, materiel, leadership and education, personnel, and facilities
DPICM	Dual Purpose Improved Conventional Munition
DS3	Disabled Soldier Support System
DSB	Dry Support Bridge
DSN	Defense Switched Network
DSP	Defense Support Program
DT/OT	developmental testing/operational testing
DTAS	Deployed Theater Accountability Software
DTCS	Deployment Temporary Change of Station
DTF	digital training facilities
DTLD	doctrine, training and leader development
DTSS	Digital Topographic Support System
EA	Executive Agent
EBCT	evaluation BCT
ECP	engineering change proposal
ECU	Environmental Control Unit
EDM	Electronic Data Manager
ELINT	electronic intelligence
ENVG	Enhanced Night Vision Goggles
EO	electro-optical; equal opportunity
EOD	explosive ordnance disposal
EOR	engage-on-remote
EOWS	engagement operations workstation
EPIAFS	Enhanced Portable Inductive Artillery Fuze Setter
EPLRS	Enhanced Position Location Reporting System
EPW	enemy prisoner of war
ER/MP	Extended Range/Multi-Purpose
ERB	Enlisted Record Brief
ERD	Employment Retrieval System
ERP	Enterprise Resource Planning
ES	Enlisted Specialty
EST	Engagement Skills Trainer
ESV	Engineer Squad Vehicle
ET	embedded training
ETRAC	Enhanced Target Range Acquisition Classification
ETS	expiration term of service
EW	electronic warfare
F/T	Field Tactical
FA	functional area
FAA	Federal Aviation Administration
FAAD-C2	Forward Area Air Defense-Command and Control

FAR	Federal Acquisition Regulation
FARRP	forward area rearm and refueling point
FAWPSS	Forward Area Water Point Supply System
FBCB2	Force XXI Battle Command, Brigade and Below
FBX-T	Forward-Based X-Band-Transportable
FCA	Future Cargo Aircraft
FCB	Functional Capability Board
FCR	Fire Control Radar
FCS	Future Combat Systems
FDA	Food and Drug Administration
FDU	Force Design Update
FECM	Fires and Effects Command Module
FFMIA	Federal Financial Management Improvement Act
FFW	Future Force Warrior
FISMA	Federal Information Security Management Act
FL	focused logistics
FLIR	forward-looking infrared
FM	field manual
FMS	foreign military sales
FMTV	Family of Medium Tactical Vehicles
FOB	Forward Operating Base
FOM	family of munitions
FoS	family of systems
FRP	full-rate production
FRS	Forward Repair System
FS3	Fire Support Sensor System
FSB	forward support battalion
FSCM	fire support coordinating measure
FSV	Fire Support Vehicle
FTI	Fixed Tactical Internet
FUE	first unit equipped
FUPPS	full-up powerpacks
FY	Fiscal Year
FYDP	Future Years Defense Plan
GATM	Global Air Traffic Management
GB	Grenadier BRAT
GBI	Ground-Based Interceptor
GCCS	Global Command and Control System
GCCS-A	Global Command and Control System-Army
GCN	GMD Communications Network
GCS	ground control station
GCSS-Army	Global Combat Support System-Army
GEO	Geosynchronous
GES	GIG enterprise services
GFC	GMD Fire Control

GFM	Global Force Management
GFMB	GFM Board
GIF	Guidance Integrated Fuze
GIG	Global Information Grid
GII	Global Information Infostructure
GMD	Ground-Based Midcourse Defense
GMLRS	Guided Ground-Based Midcourse Defense
GOTS	government off-the-shelf
GPR	ground penetrating radar
GPS	Global Positioning System
GSS	Ground Soldier System
GSTAMIDS	Ground Standoff Minefield Detection System
HBCT	Heavy Brigade Combat Team
HE	high-explosive
HEAB	high-explosive airburst
HEMTT	Heavy Expanded Mobility Tactical Truck
HEO	High Earth Orbit
HICON	higher headquarters
HIMARS	High Mobility Artillery Rocket System
HITS	Home Station Instrumentation Training System
HLVTOL	Heavy Lift Vertical Takeoff and Landing
HMMWV	High Mobility Multipurpose Wheeled Vehicle
HQDA	Headquarters, Department of the Army
HR	human resources
HRC	Human Resources Command
HSTAMIDS	Handheld Standoff Mine Detection System
HTI	horizontal technology integration
HUMINT	human intelligence
I/R	internment/resettlement
I3A	Installation Information Infrastructure Architecture
IBAS	improved Bradley acquisition sight
IBCT	Infantry Brigade Combat Team
ICBM	intercontinental ballistic missile
ICD	initial capabilities document
ICMD	Countermeasure Munitions Dispenser
ICT	Integrated Concept Team
ICV	Infantry Carrier Vehicle
ID	infantry division
IDM	Improved Data Modem
IED	improvised explosive device
IEWTPT	Intelligence Electronic Warfare Tactical Proficiency Trainer
IFC	integrated fire control
IFCS	Integrated Fire Control Shelter
IFF	identification, friend or foe
I-GNAT	Improved GNAT

IGPBS	Integrated Global Presence and Basing Strategy
I-HITS	Initial-HITS
IIR	imaging infrared
ILE	Intermediate Level Education
IM	insensitive munitions
IMA	Installation Management Agency
IMETS	Integrated Meteorological System
IMINT	imagery intelligence
IMS	Intelligent Munitions System; international military students
IO	information operations
IOT&E	initial operational test and evaluation
IP	impact point; Internet Protocol
IPDS	Inland Petroleum Distribution System
IPP	CBRNE Installation Protection Program
IR	infrared
IRB	Improved Ribbon Bridge
IRR	Individual Ready Reserve
IS	instrumentation system
IS2S	initial speech to speech
ISO	International Standardization Organization
ISR	intelligence, surveillance and reconnaissance
ISYSCON	Integrated Systems Control
IT	information technology
ITAS	Improved Target Acquisition System
ITSB	Integrated Theater Signal Battalion
IVA	Installation Victim Advocate
IVMMD	Interim Vehicle Mounted Mine Detector
IW	Individual Warrior
JAGCE	Joint Air-Ground Center of Excellence
JBAIDS	Joint Biological Agent Identification and Diagnostic System
JBFSA	Joint Blue Force Situational Awareness
JBMC2	Joint Battle Management Command and Control
JC2	Joint Command and Control
JCA	joint capabilities area
JCAD	Joint Chemical Agent Detector
JCATS	Joint Conflict and Tactical Simulation
JCBRAWM	Joint Chemical, Biological, and Radiological Agent Water Monitor
JCIDS	Joint Capabilities Integration and Development System
JCIMS	Joint CID Marking System
JDIC	Joint Interrogation and Detection Center
JDLM	Joint Deployment Logistics Model
JDN	Joint Data Network
JEFX	Joint Expeditionary Force Experiment
JEM	Joint Effects Model
JFC	Joint Functional Concept; joint force commander

JFCOM	Joint Forces Command
JFETS	Joint Fires and Effects Trainer System
JFLCC	joint force land component commander
JFO	joint fires observer
JFP	Joint Force Provider
JHL	Joint Heavy Lift
JHSV	Joint High Speed Vessel
JIC	Joint Integrating Concept
JIIM	joint, interagency, intergovernmental, and multinational
JIM	joint, interagency and multinational
JIOC-I	Joint Intelligence Operations Capability–Iraq
JLCCTC	Joint Land Component Constructive Training Capability
JLENS	Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System
JLOTS	joint logistics over-the-shore
JMPS	Joint Mission Planning System
JMRC	Joint Multinational Readiness Center
JNEM	Joint Nonkinetic Effects Model
JNMS	Joint Network Management Systems
JNN	Joint Network Node
JNTC	Joint National Training Capability
JOA	Joint Operational Area
JOC	Joint Operating Concept
JOpsC	Joint Operations Concepts
JP	jet propellant
JPADS	Joint Precision Airdrop Systems
JPALS	Joint Precision Approach and Landing System
JPDS	Joint Portable Decontamination System
JPEO	Joint Program Executive Office
JPID	Joint Platform Interior Decontamination System
JPME	Joint Professional Military Education
JPO	Joint Program Office
JPS	Joint Portal Shield
JROC	Joint Requirements Oversight Council
JRTC	Joint Readiness Training Center
JSGPM	Joint Service General Purpose Mask
JSLSCAD	Joint Service Lightweight Standoff Chemical Agent Detector
JSPDS	Joint Service Personnel/Skin Decontamination System
JSSED	Joint Service Sensitive Equipment Decontamination
JSTDS	Joint Service Transportable Decontamination System
JSTO	Joint Service Technology Office
JTA	Joint Technical Architecture
JTAGS	Joint Tactical Ground Station
JTAGS M3P	Joint Tactical Ground Station Multi-Mission Mobile Processor
JTAMD	Joint Theater Air and Missile Defense
JTCW	Joint Tactical COP Workstation

JTF	joint task force
JTRS	Joint Tactical Radio System
JTT	Joint Tactical Terminal
JWARN	Joint Warning and Reporting Network
JWCA	Joint Warfighting Capability Assessment
KE	kinetic energy
KLO	Key Leader Option
KPP	Key Performance Parameter
LACM	land attack cruise missile
LAN	local area network
LAV	Light Armored Vehicle
LCLA	low-cost, low-altitude
LCMC	Life-Cycle Management Command
LCMR	Lightweight Counter Mortar Radar
LD	leader development
LDM	laser designator module
LEO	Low Earth Orbit
LHS	Load Handling System
LLDR	Lightweight Laser Designator Range Finder
LM	lifecycle management
LMFF	Load Handling System Modular Fuel Farm
LMG	light machine gun
LMP	Logistics Modernization Program
LMTS	Laser Marksmanship Training System
LOS	line-of-sight
LPI/LPD	low probability of intercept/low probability of detection
LPWS	Land-based Phalanx Weapon Systems
LRAS3	Long-Range Advanced Scout Surveillance System
LRIP	low-rate initial production
LT2-FTS	Live Training Transformation-Family of Training Systems
LUH	Light Utility Helicopter
LUT	limited user test
LVC	live-virtual-constructive
LVC-IA	Live-Virtual-Constructive–Integrated Architecture
LW	Land Warrior
M&S	modeling and simulation
M3P	Multi-Mission Mobile Processor
MACOM	major Army command
MACS	Modular Artillery Charge System
MAMD	maneuver AMD battalions
MASINT	measurement and signature intelligence
MATCH	Modular Armored Tactical Combat House
MBCOTM	Mounted Battle Command on the Move
MBF	My Board File
MC	Mortar Carrier

MC4	Medical Communications for Combat Casualty Care
MCG	microclimate cooling garment
MCO	major combat operation
MCP	mission capability package
MCS	Maneuver Control System
MCU	Multi-Component Unit; munition control unit
MDA	Missile Defense Agency
MDET	Medium Directional Energy Tool
MEADS	Medium Extended Air Defense System
MEDEVAC	medical evacuation
MEI	major end item
MEPS	Military Enlistment Processing Stations
METL	Mission Essential Task List
METT-TC	mission, enemy, terrain and weather, time, troops available and civilian
MEV	Medical Evacuation Vehicle
MFCR	Multifunction Fire Control Radar
MGS	Mobile Gun System
MGV	Manned Ground Vehicle
MHC	Material Handling Crane
MI	military intelligence
MIDS	Multifunctional Information Distribution System
MIHDS	Modular Integrated Helmet Display System
MILCON	military construction
MILES	Multiple Integrated Laser Engagement Systems
MILSATCOM	military satellite communications
MILSTD	Military Standard
MKT	Mobile Kitchen Trailer
MLC	military load classification
MLRS	Multiple Launch Rocket System
MMC	Mission Management Center
MMPV	Medium Mine Protected Vehicle
MMW	millimeter-wave
MNC-I	Multinational Corps-Iraq
MNS	Mission Need Statement
MNSTC-I	Multi-National Security Transition Command–Iraq
MOFA	multiple option fuze, artillery
MOPP	Mission Oriented Protective Posture
MOS	military occupational specialty; Military OneSource
MOTS	Mobile Tower System
MOUT	military operations in urban terrain
MOUT IS	MOUT Instrumentation System
MPCV	Mine Protected Clearance Vehicle
MRBC	multi-role bridge company
MRE	mission readiness exercise
MRI	Medical Reengineering Initiative

MRM	Mid-Range Munition
MRX	mission rehearsal exercise
MSD	Maintenance Support Device
MSE	Missile Segment Enhancement; Mobile Subscriber Equipment
MSFA	Modular Support Forces Analysis
MSI	multispectral imager
MSO	military service obligation
M-TADS/PNVS	Modernized Target Acquisition Designation Sight/Pilot Night Vision Sensor
MTBDR	mean time between depot replacement
MTI	moving target indicator
MTRS	Man-Transportable Robotic System
MTS	Movement Tracking System
MTV	medium tactical vehicle
MTX	Mini-Transmitter
MULE	Multifunctional Utility/Logistics and Equipment Vehicle
MW	Mounted Warrior
MWS	Modular Weapon System
MWSS	Mounted Warrior Soldier System
NAMEADSMA	MEADS Management Agency
NATO	North Atlantic Treaty Organization
NBC	nuclear, biological and chemical
NBCRV	Nuclear, Biological, and Chemical Reconnaissance Vehicle
NCES	Net-Centric Enterprise Services
NCO	noncommissioned officer
NCOE	Net-Centric Operational Environment
NCOES	Noncommissioned Officer Education System
NCOW RM	Net-Centric Operations and Warfare Reference Model
NDAA	National Defense Authorization Act
NDI	nondevelopmental item
NDS	National Defense Strategy
NETOPS	network operations
NG	National Guard
NGATS	New Generation Army Targetry Systems
NLCS	Nonlethal Capabilities Set; non-line-of-sight
NLOS-C	Non-Line-of-Sight Cannon
NLOS-LS	Non-Line-of-Sight Launch System
NMS	National Military Strategy
NSPS	National Security Personnel System
NSS	National Security Strategy
NTA	nontraditional agent
NTC	National Training Center
O&S	operating and support
OACSIM	Assistant Chief of Staff for Installation Management
OBA	Operational Briefing Area

OC/T	observer-controller/trainer
OCA	offensive counter air
O-CIDS	Optical Combat ID System
OCSW	Objective Crew Served Weapon
ODA	Operational Detachment Alphas
ODS	Operation Desert Storm
OEF	Operation Enduring Freedom
OES	Officer Education System
OICW	Objective Individual Combat Weapon
OIF	Operation Iraqi Freedom
OIPT	Overarching Integrated Process Team
OIS	Objective Instrumentation System
OneSAF	One Semi-Automated Forces
OneTESS	One Tactical Engagement Simulation System
OOS	OneSAF Objective System
OPTEMPO	operating tempo
OPFOR	opposing force
ORB	Officer Record Brief
ORD	Operational Requirements Document
ORTC	Operational Readiness Training Complexes
OSD	Office of the Secretary of Defense
OSTS	Opposing Forces Surrogate Training Systems
OSTV	OPFOR Surrogate Tank Vehicle
OSV	OPFOR Surrogate Vehicle
OSWV	OPFOR Surrogate Combat Wheeled Vehicle
OT&E	operational test and evaluation
OTM	Open Terrain Module
P3I	preplanned product improvement
PB07	FY07 President's Budget
PBUSE	Property Book Unit Supply Enhanced
PCS	permanent change of station
PDHRA	post-deployment health reassessment
PEO	program executive officer
PEO EIS	Program Executive Office Enterprise Information Systems
PEO IEWS	Program Executive Office Intelligence, Electronic Warfare and Sensors
PGK	Precision Guidance Kit
PGMM	Precision Guided Mortar Munition
PLDC	Primary Leadership Development Course
PLGR	Precision Lightweight GPS Receiver
PLM+	Life-cycle Management Plus
PLS	Palletized Load System
PM	program manager
PM-CCS	Project Manager for Close Combat Systems
PME	Professional Military Education
PM-RUS	Project Manager-Robotic and Unmanned Systems

POI	programs of instruction
POS/NAV	position/navigation
POTF	Psychological Operations Task Force
PPLI	precise participant location identification
PQAS	Petroleum Quality Analysis System
PRS	Production Representative System
PSB	personnel support battalion
PSDR	Personnel Services Delivery Redesign
PSYOP	psychological operations
PT	Personnel Transformation
PTIR	Precision Track Illumination Radar
QDR	Quadrennial Defense Review
QR	quick reaction
QRC	quick-reaction capability
QS	quality surveillance
QTA	quick turn analysis
R&R	rest and recuperation
RAID	Rapid Aerostat Initial Deployment
RAM	rockets, artillery and mortars
RBCI	radio-based CID
RC	reserve component
RCI	Residential Communities Initiative
RCIED	radio-controlled improvised explosive device
RCU	remote control unit
RDA	research, development, and acquisition
RDEC	research, development and engineering center
RDTE	research, development, test and evaluation
REBS	Rapidly Emplaced Bridge System
REF	Rapid Equipping Force
REFRAD	released from active duty
RETAL	Review of Education, Training, Assignments for Leaders
RF	radar frequency
RFI	Rapid Fielding Initiative; Radar Frequency Interferometer
RFID	radio frequency identification
RIFTS	Rapidly Installed Fluid Transfer System
RIS	Remote Interface System
ROC-V	Recognition of Combat Vehicles
ROE	rules of engagement
ROV	remote operating variant
RPA	Request for Personnel Action
RPG	rocket-propelled grenade
RRP	Risk Reduction Program
RSTA	reconnaissance, surveillance and target acquisition
RSTB	Ranger special troop battalion
RTCH	Rough Terrain Container Handler

RV	Reconnaissance Vehicle
RVS	Reconfigurable Vehicle Simulator
RVT	remote video terminal
RVTT	Reconfigurable Vehicle Tactical Trainer
RWS	Remote Weapons Station
S&RL	sense and respond logistics
S&T	science and technology
SA	situational awareness
SaaS	Soldier as a System
SAL	Semi-active laser
SALE	Single Army Logistics Enterprise
SAMS-E	Standard Army Maintenance System
SAPR	Sexual Assault Prevention and Response
SAR	synthetic aperture radar
SARB	Sexual Assault Review Board
SARC	Sexual Assault Response Coordinator
SASO	stability and support operations
SATCOM	satellite communications
SATS	Standard Automotive Tool Set
SAW	Squad Automatic Weapon; Strategic Army Workforce
SBCT	Stryker Brigade Combat Team
SBIRS	Space-Based Infrared System
SBX	Sea-Based X-Band
SC	special compact
S-CATT	Soldier Combined Arms Tactical Trainer
SCS	Submunitions Clearance System
SDD	system development and demonstration
SDDC	Surface Deployment and Distribution Command
SDS	Sorbent Decontamination System
SE Core	Synthetic Environment Core
SECDEF	Secretary of Defense
SEMA	special electronic mission aircraft
SEP	Soldier Enhancement Program
SEWD	Space Electronic Warfare Detachment
SFG	Special Forces Group
S-FLTS	Sequoyah Foreign Language Translation System
SFOB	Special Forces Operations Base
SHSS	Strategic High-Speed Sealift
SIAP	Single Integrated Air Picture
SICPS	Standardized Integrated Command Post System
SIGINT	signals intelligence
SIIRCM	Suite of Integrated Infrared Countermeasures
SINCGARS	Single Channel Ground and Airborne Radio System
SIPRNET	Secret Internet Protocol Router Network
SLAMRAAM	Surface-Launched Advanced Medium-Range Air-to-Air Missile

SLEP	Service Life Extension Program
SMART-T	Secure Mobile Anti-Jam Reliable Tactical Terminal
SMC	Sergeant Major Course
SMDC	Space and Missile Defense Command
SMS	Sweep Monitoring System; Strategic Management System
SMSR	Strength Management System Redesign
SMTI	selective moving target indicator
SOA	Services-oriented Architecture
SOAED	Special Operations Aviation Expeditionary Detachment
SOCOM	Special Operations Command
SOF	Special Operations Forces
SoS	System of Systems
SOSA	System of Systems Architecture
SPBS-R	Standard Property Book System-Redesign
SPIRIT	Special Purpose Integrated Remote Intelligence Terminal
SPOD	seaport of debarkation
SPORT	Soldier Portable On-System Repair Tool
SR	surveillance radar
SRC	Standard Requirement Code
SRP	Sustainable Range Program
SRS	Strategic Readiness System
SSB	Soldier support battalion
SSC	Senior Service College
SSE	Space Support Element
SSET	Space Support Enhancement Toolkit
SSH	Secret System High
SSTOL	Super Short Takeoff and Landing
STAMIS	standard Army management information systems
STE	Synthetic Training Environment
STRAC	Standards in Training Commission
SUAS	Small Unmanned Aircraft System
SUGV	Small Unmanned Ground Vehicle
SUST BDE	Sustainment Brigade
T&E	traverse and elevation; test and evaluation
T2	Training Transformation
TA	tuition assistance
TAA	Total Army Analysis
TACSIM	Tactical Simulation
TADLP	The Army Distributed Learning Program
TADSS	training aids, devices, simulations and simulators
TAIS	Tactical Airspace Integration System
TAOC	Theater Aviation Operations Command
TARP	Training Augmentation Range Packages
TASM	tactical air-to-surface missile

TC-AIMS II	Transportation Coordinators' Automated Information for Movement System II
TCDL	Tactical Common Data Link
TDDT	Training and Doctrine Development Tool
TE	training environment
TENCAP	Tactical Exploitation of National Capabilities
TEP	Tactical Electric Power
TES	Tactical Exploitation System
TESS	Tactical Engagement Simulation System
TF	Task Force
THAAD	Terminal High Altitude Area Defense
THP	take-home package
TIB	theater intelligence brigade
TIGER	Total Integrated Engine Revitalization
TIH	toxic industrial hazard
TIM/TIC	toxic industrial material/toxic industrial chemical
TIMS	Tactical Internet Management System
TIN	Tactical Installation and Networking
TIP	thermal identification panel
TLM	target locator module
TMI	Theater Medical Information Program
TOC	tactical operations center
TOW	tube-launched, optically tracked, wire-guided
TOW BB	TOW Bunker Buster
TPG	Transformation Planning Guidance
TQG	Tactical Quiet Generator
TRADOC	Training and Doctrine Command
TRI-TAC	Tri-Services Tactical Communications
TRS	Training Simulations Division
TS/SCI	Top Secret/Special Compartmented Information
TSC	Theater Sustainment Command
TSIU	Tactical Simulation Interface Unit
TSS	Training Support System
TSV	Theater Support Vessel
TTHS	trainees, transients, holdees and students
TTP	tactics, techniques and procedures
TUAS	Tactical Unmanned Aircraft System
TUAV	Tactical Unmanned Aerial Vehicle
TWPS	Tactical Water Purification System
TWS	Thermal Weapon Sights
UAS	unmanned aerial system; Unmanned Aircraft System
UAV	unmanned aerial vehicle
UCS	Unified Command Suite
UEWR	Upgraded Early Warning Radars
UGV	unmanned ground vehicle

UHF	ultra-high frequency
ULLS-G	Unit Level Logistics System-Ground
ULLS	Unit Level Supply System
UNS	Urgent Needs Statement
UO	urban operations
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USAR	United States Army Reserve
USAREUR	United States Army Europe
USCENTCOM	United States Central Command
USAJFKSWCS	U.S. Army John F. Kennedy Special Warfare Center and School
USD	Under Secretary of Defense, Personnel and Readiness
USJFCOM	United States Joint Forces Command
USMC	United States Marine Corps
USN	United States Navy
USNORTHCOM	United States Northern Command
USPACOM	United States Pacific Command
USSOCOM	United States Southern Command
USSTRATCOM	United States Strategic Command
USTRANSCOM	United States Transportation Command
UTM	Urban Terrain Module
UVA	Unit Victim Advocate
VCCT	Virtual Convoy Combat Trainer
VCSA	Vice Chief of Staff, Army
VHAT	Virtual Helicopter Aircrew Trainer
VMET	Verification of Military Experience and Training
VoIP	Voice over Internet Protocol
VSO	veterans' service organization
VV&A	verification, validation and accreditation
WAN	wide area network
WARSIM	Warfighter's Simulation
WASS	Workforce Analysis Support System
WAVES	Wireless Audio Visual Emergency System
WETM	weather, terrain, and environmental monitoring
WIN-T	Warfighter Information Network
WMD	weapon of mass destruction
WMD-CST	Weapons of Mass Destruction Civil Support Team
WO	warrant officer
WOSC	Warrant Officer Staff Course
WOSSC	Warrant Officer Senior Staff Course

Army G8-FD
Director, Force Development
700 Army Pentagon
Washington, D.C. 20310-0700

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