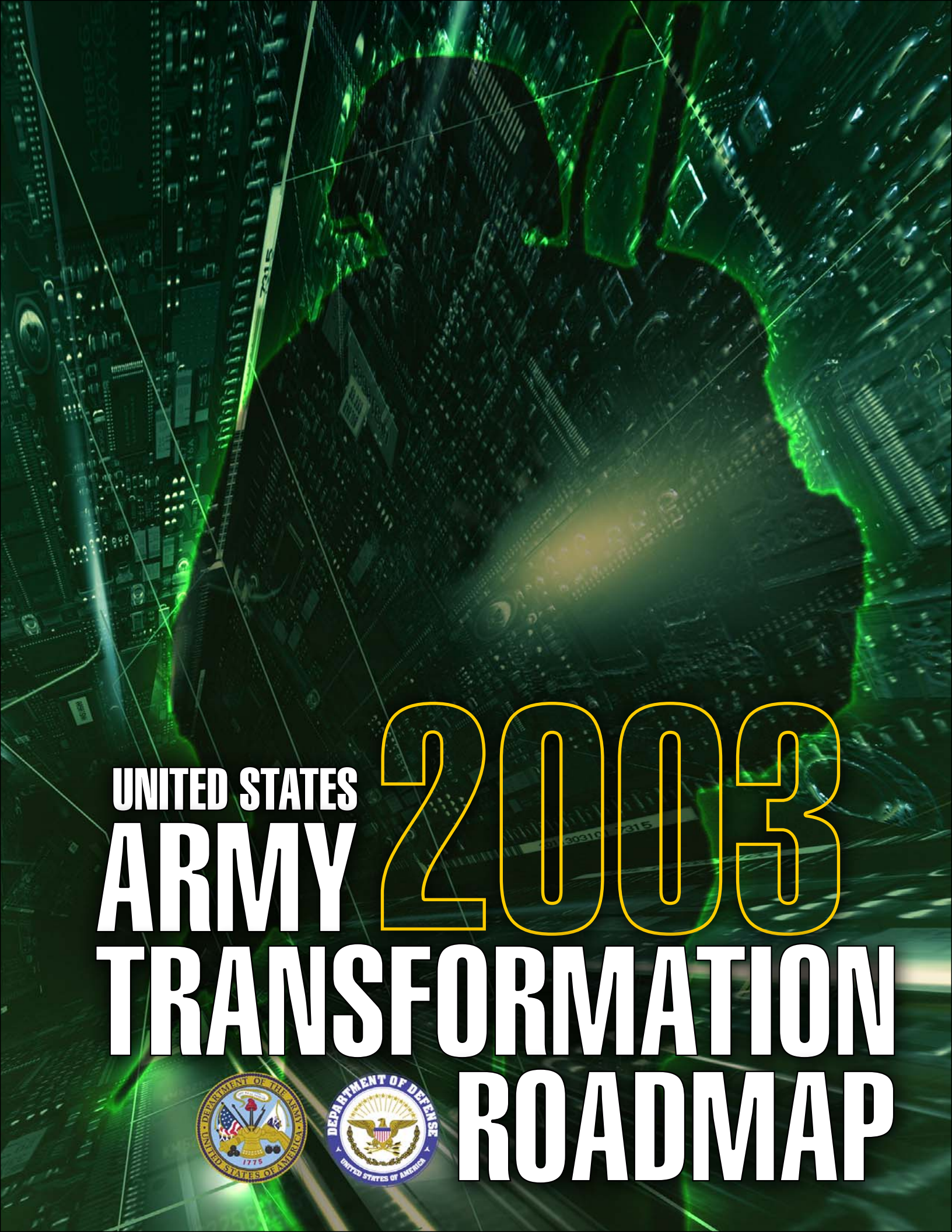

UNITED STATES ARMY TRANSFORMATION ROADMAP 2003

FOREWARD

Our Nation is at war. Security of our homeland, the Global War on Terrorism and sustained engagement around the world define today's complex and uncertain operating environment. The future will be no less uncertain, full of defined and undefined dangers to our Nation.

We must prepare now to meet the challenges of tomorrow. Rather than focusing on a single, well-defined threat, or geographic region, we must develop a range of complementary and interdependent capabilities that will enable future Joint Force Commanders to dominate any adversary or situation. A capabilities-based approach to concept and force development, as articulated in the 2001 Quadrennial Defense Review, is the major focus of defense transformation.

Transforming our Nations' military capabilities while at war requires a careful balance between sustaining and enhancing the capabilities of current forces to fight wars and win the peace while investing in the capabilities of future forces. Joint concept development and experimentation, science and technology (S&T) investment, and future force design that enables interdependent network-centric warfare will ensure future capabilities meet the requirements of tomorrow's Joint Force. Similarly, accelerated fielding of proven technologies will enhance the capabilities of our current forces at war.

As directed by the Secretary of Defense's Transformation Planning Guidance, the Army presents its first annual update to the Army Transformation Roadmap. Army Transformation will meet the needs of future Joint Force Commanders by providing a campaign quality Army with a joint and expeditionary mindset.

Peter J. Schoomaker
General, United States Army
Chief of Staff

R. L. Brownlee
Acting Secretary of the Army

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TPG Requirements and Army Transformation Roadmap Crosswalk

Requirement	Response
1. Use the definition of transformation presented in the TPG.	Chapter 1
2. Describe how the organizations plan to implement transformational architectures for future concepts, consistent with Joint Operating Concepts and supporting Joint and Service mission concepts, to include when and how capabilities will be fielded.	Chapters 3-6, and 8 Chapter 3-6
3. Identify critical capabilities from other Services and agencies required for success.	Chapters 3-6 and 8
4. Identify changes to organizational structure, operating concepts, doctrine and skill sets of personnel.	Chapter 9 and Annex B
5. As possible, include programmatic information that includes appropriation breakouts through the FYDP necessary for desired capabilities.	Annex F
6. Compartmented annex to expand identification of key capabilities and fully represent the spectrum of Service capabilities.	
7. All Roadmaps will directly address the interoperability priorities on page 16:	
a. Standard operating procedures and deployable Joint command and control processes, organizations, and systems for the Standing Joint Force Headquarters;	Chapter 7
b. A common relevant operational picture for Joint forces;	Chapters 2, 7,and 8
c. Enhanced intelligence, surveillance, and reconnaissance capabilities;	Chapter 7 and 8
d. Selected sensor-to-shooter linkages prioritized by contribution to the Joint Operating Concepts;	Chapter 7 and 8
e. Reachback capabilities that provide global information access;	Chapter 7 and 8
f. Adaptive mission planning, rehearsal, and Joint training linked with C4ISR.	Chapter 7 and 8
8. Additionally, Services will explicitly identify initiatives undertaken to improve interoperability in the following areas:	
a. Deployment of a secure, robust and wideband network;	Chapter 7 and 8
b. Adoption of post before process intelligence and information concepts;	Chapter 7 and 8
c. Deployment of dynamic, distributed, collaborative capabilities;	Chapter 7 and 8
d. Achievement of data-level interoperability;	Chapter 7 and 8
e. Deployment of net-ready nodes of sensors, platforms, weapons and forces.	Chapter 7 and 8
9. Service Roadmaps will identify plans for achieving these critical capabilities by ensuring that:	
a. Systems are capable of participating in a Joint Technical Architecture collaborative environment;	Chapter 7 and 8
b. Systems are tested and evaluated to determine actual capabilities, limitations and interoperability in realistic Joint Warfare scenarios and in performing realistic missions;	Chapter 7 and 8
c. New C4ISR, weapons and logistics systems incorporate IP-protocols;	Chapter 7 and 8

Requirement	Response
d. Systems are capable of post before processing functionality;	Chapter 7
e. Selected legacy systems are retrofitted with these capabilities.	Chapter 8
10. Transformational intelligence capabilities, specifically those mentioned on page 17:	
a. Allow us to warn of emerging crises and continuously monitor and thwart our adversary's intentions;	Chapter 7
b. Identify critical targets for, measure and monitor the progress of, and provide indicators of effectiveness for U.S. effects-based campaigns;	Chapter 7
c. Persist across all domains and throughout the depth of the global battlespace, supplying near-continuous access to our most important intelligence targets;	Chapter 7
d. Provide horizontal integration, ensuring all systems plug into the global information grid, shared awareness systems, and transformed command, control and communications (C3) systems.	Chapter 7
11. Joint and Service Roadmaps will address plans to implement other aspects of transformation to include:	
a. Incentives to foster concept-based experimentation;	Chapter 7
b. Use of prototyping methodologies;	Chapter 7
c. Development of training and education programs;	Chapter 7and 8
d. Information superiority, the identification and employment of all its elements, how it should be represented in war plans and Joint experimentation, and how to achieve it;	Chapter 7
e. Seamless integration of operations, intelligence and logistics;	Chapter 7
f. Support Standing Joint Force Headquarters and Joint Command and Control;	Chapter 7 and 8
g. Metrics to address the six transformational goals and transformational operating concepts.	Annex C
12 How experimentation programs meet the TPG experimentation criteria (pg 18) and support the priorities for experimentation. The criteria will address:	
a. Scientific method and its role in U.S. Armed Forces achieving competitive advantage;	Chapter 7
b. Experimentation in exercises and operations and considerations for design, data collection, analysis and sharing results;	Chapter 7
c. Experimentation with virtual capabilities and threats to explore mid- and far-term transformational possibilities;	Chapter 7
d. Experimentation with aggressive threats that include asymmetric capabilities, the possibility of technological breakthroughs, and that span a variety of environments;	Chapter 7
e. Use of red teams, supported with fenced funding and operating at the tactical, operational, and strategic levels;	Chapter 7
f. Establishment of procedures and repositories for capturing and sharing lessons learned.	Chapter 7

EXECUTIVE SUMMARY

CHAPTER 1

FOUNDATION FOR THE FUTURE

The Nation requires a Joint Force that is full-spectrum dominant to meet the strategic mandates established by the *National Security Strategy* (NSS) and further elaborated with the *Defense Planning Guidance* (DPG); *Quadrennial Defense Review* (QDR); *Transformation Planning Guidance* (TPG); Joint Operations Concepts (JOpsC) and Joint Operating Concepts (JOCs). As emphasized in the NSS, the military must transform in order to provide the President with a wider range of military options to discourage aggression and any form of coercion against the United States. This transformation occurs within a complex, uncertain, and dynamic 21st century security environment. Joint transformation affirms the critical role of land power to dominate the highly complex land environment that comprises the heart of most joint operations. Combatant commanders have clear and enduring needs to swiftly defeat the efforts of regional aggressors, win decisively in extended conflicts, or execute smaller-scale contingency operations. A campaign-quality Army with a joint and expeditionary mindset enables the Joint Force to exercise direct, continuous, and comprehensive control over terrain, resources, and people. To provide dominant land power, the Army balances its core competencies and capabilities to train and equip Soldiers and grow leaders and provide relevant and ready land power capability to the combatant commander and the joint team.

The *2003 Army Transformation Roadmap* (ATR) details Army actions to identify and build required capabilities now, allowing for better execution of joint operations by the Current Force while developing Future Force capabilities essential to provide relevant, ready, responsive, and dominant land power to the Future Joint Force. The ATR complies with the DPG directive to report on how Army Transformation fully supports and is congruent with Defense Transformation efforts through the Future Years Defense Program (FYDP). It fulfills the TPG requirement to demonstrate how the Army provides the capabilities through and just beyond the FYDP in support of the joint force commander's (JFC's) ability to execute emerging JOCs within the context of the JOpsC. The JOCs are Major Combat Operations (MCO), Strategic Deterrence (SD), Stability Operations (SO), and Homeland Security (HLS). The ATR also outlines the capabilities Army forces require from other Services within the context of Defense Transformation to meet future JFC requirements.

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 exploit the Nation's advantages and protect against asymmetric vulnerabilities to sustain strategic position. This helps underpin peace and stability in the world. The Army's Transformation Strategy has three components: the transformation of Army culture, the transformation of processes—risk adjudication using the Current to Future Force construct, and the development of inherently joint transformational capabilities.

The first component is the transformation of Army culture through leadership and adaptive institutions. The complexity and uncertainty envisioned in the future operational environment require that Army personnel and institutions possess superiority in adaptation, innovation, and

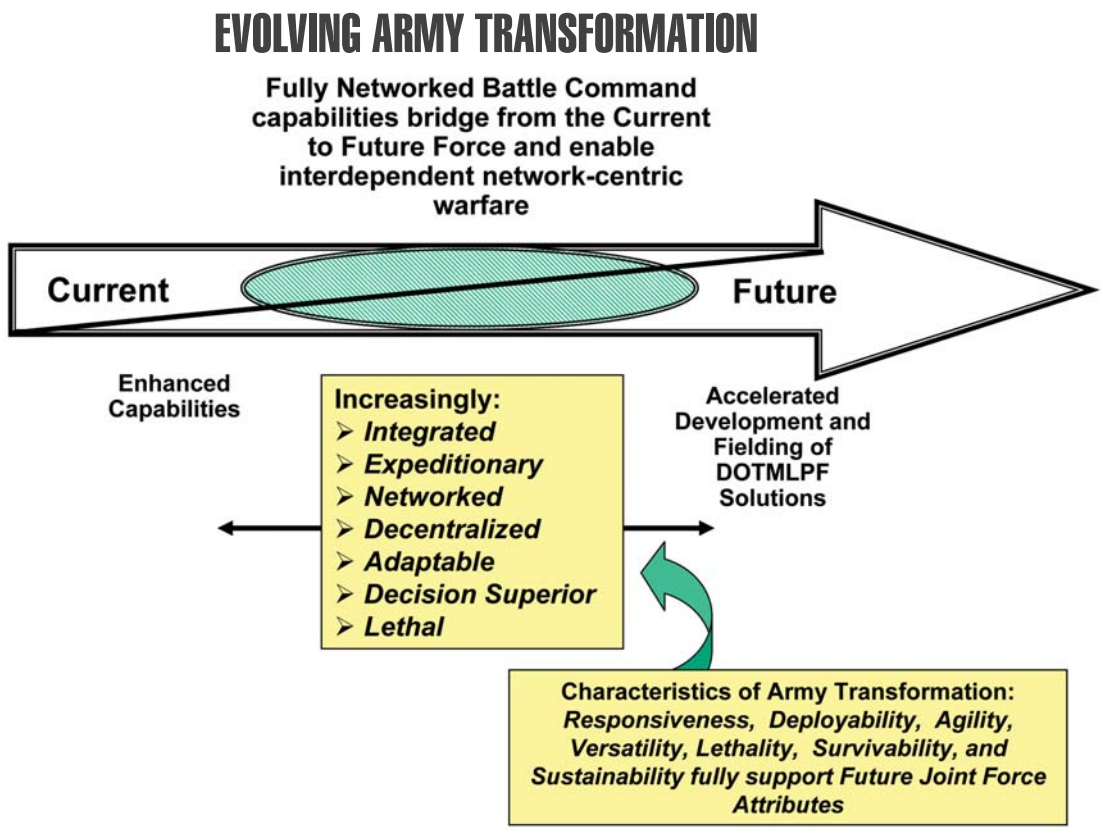


Figure 1. Current to Future Force Construct

learning. Leaders shape behavioral change, and this is the first step to cultural change. A transformational cultural shift will carry over into other areas. Ultimately, the ability to rapidly adapt processes and resulting Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF) solutions will be the measure of the Army's agility—and proof of its culture of innovation.

The second component is the transformation of processes—risk adjudication using the Current to Future Force construct. Joint Forces must be integrated, expeditionary, networked, decentralized, adaptable, decision superior, and lethal. The combination of Joint Force attributes and joint concepts provides a foundation for Army warfighting concepts. In collaboration with the other Services and U. S. Joint Forces Command (USJFCOM), the Army conducts experimentation, analysis, and capabilities assessment through the Joint Capabilities and Integration Development System (JCIDS) to develop the capabilities that operationalize joint concepts.

The Army frames its transformation through the interaction of constantly evolving capabilities between Current to Future Forces (Figure 1). The Current Force is the operational Army of today, trained and equipped to conduct operations as part of today's Joint Force. The Future Force is the operational force the Army continuously seeks to become. Informed by national security requirements and Department of Defense (DOD) guidance, the Future Force is the strategically responsive, joint interdependent, precision maneuver force, dominant across the full range of military operations envisioned for the future global security environment. While the Army develops the Future Force, it simultaneously accelerates select Future Force DOTMLPF capabilities to enhance the Current Force. Similarly, the operational experience of the Current Force directly informs further progress toward Future Force capabilities. Fig-

ure 1 depicts this continuum as the shaded area, a transitional zone.

In addition, the Current to Future Force construct provides a framework to base smart business decisions that reduce Current Force risks and provide greater force capabilities per dollar. The Army is pursuing a range of actions to enhance Current Force capabilities while developing the Future Force. Modular, capabilities-based unit designs; the Force Stabilization and Unit Manning System; and networked battle command capabilities are three examples of ongoing Army efforts to create smaller, faster, lighter, and more lethal Army forces for interdependent joint operations now and into the future. These and other actions are explained in great detail in subsequent chapters.

The third component is the building of transformational capabilities to the Joint Force. As the Army develops enhanced operational capabilities over time and integrates those capabilities in the Current and Future Forces, it creates synergies that support the JOCs. A full-spectrum capable Joint Force that can see first, understand first, act first, and finish decisively will successfully execute the JOCs. To achieve this, a knowledge-based Army exploits advanced information technologies and space-based assets to enable network-centric battle command—fully integrated within the joint, interagency and coalition framework. By developing more modular, strategically responsive organizations while institutionalizing a joint and expeditionary mindset, the Army significantly increases the combatant commander's ability to rapidly defeat any adversary or control any situation across the range of military operations.

In conjunction with building more strategically responsive organizations is the establishing of a total force unit rotation and readiness plan that provides ready and relevant land power to the joint force commander. Starting in FY04, the Army is redesigning the force to achieve a 15-day deployable Active Component (AC). Active Component forces provide rapidly responsive, agile, and expeditionary forces that respond in the first fifteen days of an operation. Campaign quality forces comprised of AC and Reserve Component (RC) units provide the depth and capability necessary to conduct sustained land operations. Reserve Component forces provide strategic depth and lead homeland security efforts. The Army is integrating these changes within the context of the JOCs to remain synchronized with Joint Force capabilities.

CHAPTER 2

BATTLE COMMAND

Battle command is the art and science of applying leadership and decision making to achieve mission success. A JFC's ability to dominate any adversary or situation in full-spectrum operations rests on his ability to make qualitatively better decisions than an adversary and act at a tempo that simply cannot be matched. The Army views battle command as the essential operational capability that fundamentally enables the conduct of future joint operations. To implement the JOpsC and JOCs and achieve decision superiority, the Future Joint Force will exercise battle command within an inherently joint, top-down network that provides common situational understanding.

As the Army transforms, battle command forms the critical bridge from Current to Future Forces. The Army's battle command concept and strategies are consistent with emerging Joint Command and Control (JC2) and Battlespace Awareness (BA) functional concepts within the JOpsC. The Future Force network will be integrated into the Global Information Grid (GIG) by a highly mobile, self-organizing, self-healing, multilevel secure, resilient network that transports multiple forms of information among multiple operational/tactical echelons. The Future Force Network is being designed to conform to the Joint Technical Architecture and to the GIG architectures.

CHAPTER 3

MAJOR COMBAT OPERATIONS JOINT OPERATING CONCEPT (MCO JOC)

U.S. combatant commanders are developing and refining a series of new joint concepts that will serve as the cornerstone in the efforts to create and maintain the future military capabilities required in the years ahead. Joint concept development occurs within an evolving framework that includes the overarching JOpsC and the four supporting Joint Operating Concepts (JOCs).

Each JOC is not a stand-alone operation or mission set. There is a fundamental yet complex interrelationship among the four cornerstone JOCs. The Homeland Security and Strategic Deterrence JOCs are inextricably linked to their like-named strategic imperatives. By their very nature, these two JOCs are, and will continue to be, continuous and ongoing regardless of major combat or stability operations. Stability Operations are military operations conducted with other elements of national power and multinational partners to establish order and promote stability. Major Combat Operations are the ultimate military coin of the realm for a global power. The ability to rapidly and successfully prosecute MCO anywhere has fundamental deterrent value that underscores the credibility and effectiveness of joint forces for full-spectrum operations, enhances stability in key regions, and promotes U.S. homeland security.

Within the operations environment, Army forces must be designed, organized, and trained for responsive and successful execution of JOCs, and rapid transition between the mission sets, tasks and conditions inherent in the JOCs. It is essential to recognize that JOCs are usually implemented simultaneously, whether in multiple regions, in a single JOA, or both. The Army, as part of the joint team, must retain the capacity to support global operations while maintaining the ability to rapidly and seamlessly transition to new requirements.

Major Combat Operations are large-scale conflicts against an organized adversary possessing significant military capability and the will to employ that capability in direct opposition to, or in a manner threatening to, U.S. national security. The central objective of U.S. military forces in the Major Combat Operations Joint Operating Concept (MCO JOC) is to achieve victory in battles, campaigns, and wars through the fluid and coherent application of joint capabilities within an inherently joint, interagency and multinational environment.

The MCO JOC is predicated upon a globally integrated network that links U.S. military forces and all relevant agencies and coalition partners; facilitates collaboration and shared understanding; and serves as an integrating mechanism to achieve unity of action. Such a networked environment will stimulate synergy, adaptability, and opportunism and thereby generate greater effectiveness, efficiency, and economy.

The MCO JOC remains under development and does not yet address how the JFC will execute an MCO. Future concept development and experimentation continue to refine Army capabilities. Wargaming and daily combat experience continue to refine Army capabilities that support this JOC. Army capabilities that support MCO are the most dynamic in that failure to conduct MCO will destroy credibility to perform other, less dangerous, operating concepts. Army capability in support of MCO underscores credibility for full-spectrum operations (in which control of land, people, and resources is required to achieve military victory) and to set the conditions to achieve strategic and political objectives. Key Army capabilities of the MCO JOC will include:

- Modular, combined arms forces, rapidly deployable, in ready-to-fight configurations, into a JOA at time and location required by the JFC

- Battle command on-the-move that supports rapid, integrated, near-simultaneous operations throughout the JOA
- Enhanced Soldier, platform and force protection capabilities and enhanced theater support capabilities

CHAPTER 4

STABILITY OPERATIONS JOINT OPERATING CONCEPT (SO JOC)

The Joint Force conducts the Stability Operations Joint Operating Concept (SO JOC) under these conditions: prior to initiation of combat operations (to prevent conflict); during combat operations (to mitigate the effects of conflict); as a result of combat operations (to consolidate gains and rebuild damaged societies); and as a stand-alone operation.

The military challenge inherent in the SO JOC flows from the premise that, to create conditions amenable to political reconciliation, the joint force must establish and sustain control of land, people, and resources within the JOA. The SO JOC envisions an inextricable link to interagency and multinational efforts. Stability Operations are proactive—they respond and shape the regional battlespace in such a way that resistance is impractical and assistance is welcome. Stability Operations are inherently manpower intensive. They place a high demand on the military capabilities required to establish the safe and secure conditions necessary for all elements of the joint, interagency and multinational team's freedom of action to collectively achieve success.

The Army provides the majority of operational and sustainment capabilities for the Joint Force across the full scope of SO missions and tasks. As a result, Army capabilities will include:

- Modular, tailored, multifunction forces rapidly deployable into a JOA at times and locations required by the JFC
- Increased special operations forces (SOF) capabilities
- Increased security and protection capabilities for U.S. forces and assets, non-DOD U.S. personnel, nongovernmental organizations (NGOs) and key assets and infrastructure within the JOA

CHAPTER 5

STRATEGIC DETERRENCE JOINT OPERATING CONCEPT (SD JOC)

Strategic Deterrence is the prevention of aggression or coercion by adversaries that threaten the survival of the United States or its national interests. Forward-stationed, forward-deployed, and expeditionary forces around the world, as well as Theater Security Cooperation actions, provide inherent deterrent value and assist in maintaining situational understanding. Similarly, active and passive homeland defense capabilities are major contributors to strategic deterrence. The Strategic Deterrence Joint Operating Concept (SD JOC) describes how a JFC will plan, prepare, deploy, employ, and sustain a joint force to achieve specific deterrence objectives established by the Nation's leaders. Army capabilities that support MCO and SO greatly enhance the deterrent value of each, and therefore directly support the overall concept of strategic deterrence.

The ATR addresses the SD JOC, focusing on influencing adversaries' decision-making calculus along three fundamental approaches: deterrence by benefit denial, deterrence by cost imposition, and constraint to mitigate the perceived consequences/costs. In addition to describing required joint capabilities and interdependencies, the ATR addresses these Army capabilities:

- Enhanced SOF direct action and special reconnaissance

- Modular combat forces that are tailorable as part of a joint team for limited duration Global Strike operations
- Ground-based space control capabilities to ensure JFC access to key command and control (C2) and ISR networks and systems, and to deny an adversary the same
- Ground-based integrated missile defense capabilities for homeland defense and protection of forward-deployed forces and allies
- Increased counterterrorism and counter-weapons of mass destruction (WMD) capabilities

CHAPTER 6

HOMELAND SECURITY JOINT OPERATING CONCEPT (HLS JOC)

The Homeland Security Joint Operating Concept (HLS JOC) posits a secure U.S. homeland as the Nation's first national security priority. The HLS JOC describes how the Joint Force performs its responsibilities in support of securing the homeland, specifically how joint forces will conduct Homeland Defense (HLD) against external threats and aggression; provide support to civilian authorities; and support DOD Emergency Preparedness (EP). Army forces provide essential capabilities for successful prosecution of MCO and SO, which directly support HLS through operations in forward regions and the approaches. Army forces also provide capabilities that directly support Joint Force HLS mission sets of HLD, Civil Support (CS) and EP.

In support of the HLS JOC the ATR describes required joint capabilities, Army capabilities that support joint force capabilities and concept execution, and joint interdependencies.

CHAPTER 7

OTHER TRANSFORMATIONAL INITIATIVES

A number of other specific enablers and requirements of the TPG are addressed in the Roadmap. These initiatives are the foundations of Army Transformation and will ensure consistent growth and Future Force development.

Concept Development and Experimentation (CD&E)—a Joint and Army Partnership

The Army Transformation Concept Development and Experimentation Campaign Plan (AT-CDEP) is based on the goals and objectives for Transformation set forth in the NSS, DPG, QDR, the *National Military Strategy* (NMS) and the TPG. The AT-CDEP supports Army Transformation by identifying what, when, and how the Army must learn in order to field Future Force capabilities this decade. Concept development and experimentation efforts are now focused on achieving Future Force capabilities by developing a body of knowledge linked by a series of experiments; in effect, a campaign of learning. Army experiments have and will continue to achieve the following standards:

- Conduct all integrating and capstone experiments within a joint context
- Address sustained continuous distributed operations, operational maneuver from strategic distances, and shaping and decisive operations for Army forces in a joint context
- Prescribe Army participation in Joint and Service CD&E, to support the integration of air, land, sea, cyber and space domains
- Address the full range of military operations across the DOTMLPF domains

Science and Technology

The Army Science and Technology (S&T) Program is critical to developing the transformational capabilities envisioned for the Current Force and the Future Force. The S&T Program speeds development of the core technologies that will enable a land combat force to dominate potential adversaries. The S&T Program is:

- Developing technologies and prototype systems for the Future Force—with the Future Combat Systems (FCS) as the cornerstone

- Demonstrating innovative technology solutions to achieve leap-ahead or paradigm shifting warfighting capabilities, including:
  - Mobile, secure, self-organizing networks for seamless joint operations
  - Tunable lethality (solid state laser, high-power microwaves, nonlethal weapons) for effects-based operations
  - Autonomous unmanned air and ground systems for increased survivability and reduced logistics
  - Immersive simulations and virtual environment technologies for Soldier, leader and unit training

The S&T Program balances risk, technological developments, military payoffs, and especially time—immediate contributions to today's Army through basic research needed to enable capabilities 20 years in the future. The balance between the near-, mid-, and far-terms is driven by the need to be responsive to warfighter requirements and the responsibility to maintain a long-term perspective that encompasses technological opportunities to achieve leap-ahead warfighting capabilities.

Transforming Army Business Practices

As described in the 2002 *Army Transformation Roadmap*, Transformation applies not only to what the Army does, but how it does it. The Army is refocusing its business practices to generate prompt, decisive and sustained land power capabilities. The following examples convey the flavor of Army business practice transformation:

- Army Logistics Enterprise (ALE) Integration
- Industrial Base Strategic Initiatives
- Ground Systems Industrial Enterprise (GSIE)
- Performance-based Logistics (PBL)
- Simulations and Modeling for Acquisition, Requirements, and Training (SMART) Initiative

Interoperability

Interoperability is the key enabler that allows the Joint Force to remain dominant across the entire spectrum of military operations. The Joint Technical Architecture provides a collaborative environment in which all Service systems can participate. Joint Technical Architecture-Army (JTA-A) is the comprehensive set of baseline standards required for Army and joint interoperability. It is the set of building codes upon which Army command, control, communications, and computers/information management (C4/IM) systems are based. The JTA-A ensures C4/IM-related systems and products provide the technical foundation for a seamless flow of information and interoperability among all systems that produce, use or exchange information electronically. The JTA-A mandates standards and guidelines for system development and acquisition that may reduce costs, development and fielding time for improved systems.

Supporting Transformational Intelligence Requirements

Army Intelligence Transformation represents a fundamental change in the way the Army thinks about and performs intelligence collection, analysis, production, and dissemination. The new focus emphasizes the cognitive requirements of knowledge creation. Intelligence Transformation changes the focus from systems and processes to solutions that improve the warfighter's understanding of the battlespace. Fused intelligence and assessment capabilities provide dominant knowledge to the commander—informing decision making and providing predictive cognizance. Intelligence Transformation delivers high-quality and timely intelligence across the range of military operations.

Fundamental to achieving this new capability is developing actionable intelligence that is tailored to the needs of the decision maker. Actionable intelligence allows greater individual initiative and self-synchronizing among tactical

units. The intelligence challenge is to redefine Army intelligence so that every Soldier is both a contributor to and a consumer of the global intelligence enterprise. While tactical commanders nearest to the fight can leverage modular, tailored packages to develop intelligence, they are also supported by a grid of analytic centers focused on their intelligence needs. To achieve this objective, Army intelligence pursues six fundamental ends:

- Change Army Intelligence Culture—Create a campaign quality, joint, and expeditionary mindset through doctrine, operational, and personnel policies, regulations, and organizations, to develop intelligence professionals competent from mud to space who know "how to think" and are focused on the commander at the point of decision.
- Fix Training—Reshape training to provide the volume, variety and velocity of intelligence and non-intelligence reporting.
- Rapid Technology Prototyping—Develop an agile technology enterprise that enables the intelligence force to respond to a learning enemy with the best technical solutions available in real time.
- Create the Framework—Create an information and intelligence grid inherently joint, providing common operational picture (COP), universal visibility of assets, horizontal and vertical integration, and situational understanding, linking every "Soldier as sensor and consumer" to analytic centers.
- Enhance Tactical Echelons—Provide robust, flexible, modular, all-source collection and analytical capabilities, born joint, and part of a tactical force capable of independent action but empowered by linkages to a global grid and analytic and collection overwatch.
- Transform human intelligence (HUMINT) and counterintelligence (CI)—Grow a CI and HUMINT force with a more tactical focus that provides more relevant reporting.

CHAPTER 8

BUILDING TRANSFORMATIONAL CAPABILITIES

People—The Human Dimension of Transformation

Woven throughout the ATR is the concept that the human dimension of the military's transformation remains the crucial link to both the realization of future capabilities and the enhanced effectiveness of current ones. Army human resource (HR) policies, systems, and enablers encompass military, civilian, contractor, joint and multinational forces to provide the Joint Force with the right individuals and units, at the right place, and at the right time. The Army has started to install comprehensive, integrated, and interoperable HR programs, policies and procedures across all Army components and within the joint, interagency, and multinational environments. In FY03, the Army activated the Human Resource Command (HRC). The Army HRC merged AC and RC personnel commands and the Civilian Personnel Operation Center Management Activity.

In addition to increasing the effectiveness of the HR system, the Army is transitioning to a Force Stabilization and Unit Manning System (FSUMS) that synchronizes assignments of Soldiers to units' operational cycles. The goal of the Force Stabilization and Unit Manning System is to provide ready and effective combat formations to combatant commanders while reducing turbulence, increasing predictability, and providing stability for Soldiers and families.

Leadership, Leader Development, and Education

The art and science of leadership is the Army's stock in trade. Leader development grows competent, confident, self-aware and decisive leaders, prepared for the challenges of full-spectrum operations in joint, interagency and multinational environments. The Army has started to reengineer leader development and training programs to focus on gaining and sustaining the high levels of expertise on technical

and cognitive skills essential for Current and Future Forces. Growing competent, adaptive and self-aware leaders, embodied with the Army warrior culture, is essential to instill a culture of innovation in the Army.

Training

Achieving a ready Current Force today and a transformed Future Force requires a transformation in the way units train for joint operations. The Army's Training Transformation Initiative, supporting the June 2003 *Defense Department Training Transformation Implementation Plan*, provides dynamic, capabilities-based training and mission rehearsal for Army forces to accomplish their mission in joint operations. The Training Transformation Initiative links the focus of Service training to the Joint Training System (JTS) and increases the quantity, quality, and priority of joint training. Army training and assessment capabilities enable this Joint capability to produce a force capable of interdependent network-centric warfare. Three capabilities form the foundation for Training Transformation:

- The Joint Knowledge Development and Distribution Capability improves individual knowledge, skills, and abilities for joint operations.
- The Joint National Training Capability allows a single Service to train in a realistic joint context with other Service forces and joint battle staffs.
- The Joint Assessment and Enabling Capability ensures systematic assessment of Training Transformation plans, programs, and investments to produce continuous improvement of Joint Force readiness.

Organizations

Creating modular organizations is an important component in achieving ready and relevant dominant land power capability for the Joint Force. Over the last four years, the Army has developed the organizational constructs for truly network-centric capable tactical formations—the Stryker Brigade Combat Team (SBCT) for the Current Force and the Unit of Action (UA) for the Future Force. The Army is also redesigning two of its divisions to enhance modularity of the Current Force while continuing to work on the development of Future Force Units of Employment (UEs). Units of Employment are tailorable, higher-level echelons that integrate and synchronize Army forces for full-spectrum operations at the higher tactical and operational levels of conflict.

Doctrine

Doctrine is a set of fundamental principles that guide action. The U.S. Army Training and Doctrine Command (TRADOC) has developed the Future Force Capstone Concept as well as subordinate and supporting concept and capabilities documents to support Army Transformation. Concurrently, TRADOC developed the doctrine for the Current Force's SBCTs to support the Army's goal to go from concept to initial operating capability (IOC) in three years. TRADOC has also undertaken an initiative to rapidly integrate proven concepts, lessons learned, tests and experimentation results into Army doctrine for maintaining and sustaining the Current Force as the Army transforms to the Future Force.

Materiel

The Army is taking specific steps to develop and field systems that enable Current and Future Forces to provide the capabilities a JFC requires to execute the JOCs. Many of these capabilities come from the procurement and fielding of critical transformational systems and families of systems including:

- The Stryker Family of Armored Vehicles
- The Network, to include the Warfighter Information Network-Tactical (WIN-T)
- The Joint Tactical Radio System (JTRS)

- The Distributed Common Ground System-Army (DCGS-A)
- Soldier Modernization
- The Comanche Armed Reconnaissance Helicopter
- The Future Combat Systems (FCS)
- An Army-standard and Joint-interoperable Battle Command System (BCS)
- Precision Munitions
- Air and Missile Defense Systems
- Critical Sensors
- Distribution-based Logistics (DBL) systems

The Army is investing in other critical technologies based on Future Force capability requirements to spiral into the Current Force to enhance immediate needs of the Joint Force. The ATR highlights materiel programs and related initiatives organized by the functional concepts.

Facilities

Installations provide a vital role for transforming the force. Installations enable mission accomplishment by providing information hubs, power projection platforms, combat preparation and sustainment bases, force protection, and community support. The Army has developed several initiatives to link infrastructure with transformation:

- The Army Knowledge Management (AKM) initiative will modernize the installation infostructure to support network-centric operations and to enable Home Station Operating Centers (HSOCs) that serve as 24-hour operations hubs to support deployed units.
- Army management of installations has been placed under the Installation Management Agency (IMA) to manage base operations and funding.
- The Residential Communities Initiative (RCI) capitalizes on commercial expertise and private capital to perform family housing management.

CHAPTER 9

BALANCING RISK—RESOURCING ARMY TRANSFORMATION

For the President's Budget FY04 (PB04), the Army made difficult decisions to compensate for directed guidance in support of the Current Force and maintain its commitment to accelerate transformation to reduce risk in the Future Force. To reduce future risk and fund Army transformational capabilities, the Army accepted a higher level of operational risk in the Current Force. The Army must continue to assess the risk in its program as it tries to balance current readiness, the well-being of its people, transformation to a future force, and new operational commitments emerging from the Global War on Terrorism (GWOT).

Risk in PB05 and Future Years Defense Programs (FYDPs). Since the submission of PB04, the global strategic environment has continued to change. As of 7 October 2003, the Army had over 327,000 Soldiers deployed in over 120 countries. These changes and the resulting aftermath have caused the Army to reexamine its risk assessment-specifically how to balance risk between the Current Force and the Future Force. The Army now has over 130,000 Soldiers conducting stability operations in Iraq. The Army's priority must be to provide organized, trained, and equipped forces to fight the GWOT.

Congressional supplemental funding has offset most of the cost for these operations. However, the use of supplemental funding does not fully reimburse the Army for ongoing operations or the redeployment of assets in support of these operations. The resulting cost of the Army's continuing global commitments introduces operational and force management risks that must be continuously evaluated in the next several FYDPs.

The Army will focus on providing flexible, responsive and accelerated resource processes for an Army at war. The Army will also shift its focus to accelerate those identified capabilities and DOTMLPF solutions associated with the Future Force and insert them into the Current Force. Nevertheless, difficult resource decisions must be made for this acceleration and insertion—the Army should be resourced to a level at which it can appropriately balance the risk between the Current and Future Forces.

As outlined at the end of this chapter, the Army's Program Change Proposals (PCPs) for PB05 reinforce the Army's commitment to both the FCS and the Future Force. The FCS and complementary systems PCP alone proposes more than $3B in additional resources.

- Force Management risk addresses the Army's people programs and its force structure. With a high Current Force operational tempo associated with GWOT and other commitments, force management risk is higher than anticipated. The Army is taking active steps to reduce this risk in the near term. The following actions are focused on reducing this risk:
- Rotation Plan—implement a rotation plan that supports sustained global engagement.
- Force Stabilization and Unit Manning System—implement FSUMS to revise the manning system to complement the rotation-based system of sustained global engagement and minimize individual rotations.
- Modularity—initiate a reset of the Army to a provisional design. Reorganize elements of the Current Force into prototype organizations that achieve the near-term modularity required for brigade and division echelons.
- AC/RC Balance—develop force structure options to have a modular Army and a proper mix of AC/RC forces.
- Soldier and Installation as Flagships (Well-being)—synchronize programs to the rotation plan to support families and installations when Soldiers are deployed.

The Army will continue to reassess this risk in POM 06-11. Annex B of the ATR provides PB04 programmatic detail of the Army's transformational programs. It satisfies the TPG requirement for programmatic information on Army Transformation efforts.

CHAPTER 10

CONCLUSION—ARMY LONG-TERM TRANSFORMATION

The ATR is the Army Transformation strategy. It addresses necessary actions and activities across DOTMLPF domains to build and field new capabilities now that will allow the Current Force to better execute Joint operations. It explores capabilities essential for the Current and Future Forces to remain relevant, responsive, and dominant by providing a land force that remains organized, trained, and equipped for joint, interagency, and multinational full-spectrum operations.

Army leaders recognize that Transformation is an ongoing process, rather than an end state. Fundamental changes to the way Army forces conduct operations will expand the range of options for the President, the Secretary of Defense, and combatant commanders to deter conflict, reduce adversary options, and limit conflict escalation. A transformed Army, infused with a joint and expeditionary mindset, provides the Joint Force its essential campaign-capable and network-centric land power capability.

While environments will change and the JOCs will mature, the requirement for the Army to deliver the right Army forces at the right place and time to enable the JFC to defeat any adversary or control any situation will endure. The Army will continue to focus its efforts on balancing Army core competencies and capabilities: to train and equip Soldiers and grow leaders and to provide a relevant and ready land power capability to the combatant commander and the joint team.

FOUNDATION FOR THE FUTURE 1

"The major institutions of American national security were designed in a different era to meet different requirements. All of them must be transformed."

— *National Security Strategy, September 2002*

The National Security Strategy (NSS) of the United States demands much from America's military. Defending the Nation, promoting global peace and stability, and extending the benefits of freedom around the world mandate a military dominant across the full spectrum of operations, effectively operating in concert with the other instruments of national power and within joint, interagency, and multinational contexts.

The Nation requires a Joint Force that is full-spectrum dominant to meet the strategic mandates established by the NSS and further elaborated within the Defense Planning Guidance (DPG); Quadrennial Defense Review (QDR); Transformation Planning Guidance (TPG); and the emerging Joint Operations Concepts (JOpsC) and Joint Operating Concepts (JOCs). Full-spectrum dominance is the defeat of any adversary or control of any situation across the full range of military operations. A full-spectrum dominant Joint Force has the ability to sense, understand, decide, and act faster than any adversary.

As emphasized in the NSS, the military must transform in order to provide the President with a wider range of military options to discourage aggression and any form of coercion against the United States. This transformation occurs within a complex, uncertain, and dynamic 21st century security environment. Here, the nature of war remains a violent clash of wills, but the conduct of warfare is changing at an unprecedented rate as a result of adaptive adversaries and evolving technologies. Defense Transformation produces new and enhanced capabilities to enable today's forces to better execute current operations. At the same time, transformation produces the concepts and capabilities that will enable the Future Joint Force to respond to crises, adapt, fight, and transition between operations more rapidly, effectively, and efficiently.

Joint transformation affirms the critical role of land power to dominate the highly complex land environment that comprises the heart of most joint operations. Combatant commanders have clear and enduring needs to swiftly defeat the efforts of regional aggressors, win decisively in extended conflict, and execute smaller-scale contingency operations. A campaign-quality Army with a joint and expeditionary mindset enables the Joint Force to exercise direct, continuous, and comprehensive control over terrain, resources, and people. To provide dominant land power, the Army balances its core competencies to train and equip Soldiers and grow leaders, and provide relevant and ready land power capability to the combatant commander and the joint team.[1]

Army Core Competencies

- Train and equip Soldiers and grow leaders
- Provide relevant and ready land power capability to the combatant commander and the joint team

[1] Enduring capabilities of Army forces in support of the Joint Force include shaping the security environment, executing prompt response, mobilizing the Army, forcible entry operations, sustained land dominance, and support for civil authorities. This represents a change that will be reflected in the next update of *Field Manual 1, The Army*.

Today, the Army is pursuing the most comprehensive transformation of its forces since the early years of World War II, when General George Marshall and Lieutenant General Lesley McNair oversaw the creation of the fighting machine that achieved global victory. Army Transformation produces evolutionary and revolutionary changes intended to improve Army and Joint Force capabilities to meet current and future full-spectrum requirements. The pace of Army Transformation, particularly over the past several years, has produced important results including experimentation, fielding, and initial operational capability (IOC) of the first Stryker Brigade Combat Team (SBCT); successful transition from concept and technology demonstration to system development and demonstration of the Future Combat Systems (FCS); and the rapid fielding of digital battle command capabilities to Army forces and joint and coalition partners during Operation Iraqi Freedom (OIF).

As significant as these events are, Army Transformation encompasses more than materiel solutions. Adaptive and determined leadership, innovative concept development and experimentation, and lessons learned from recent operations produce corresponding changes to Doctrine, Organizations, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF). A continuous cycle of innovation, experimentation, experience, and change enables the Army to improve capabilities to provide dominant land power to the Joint Force now and into the future.

The *2003 Army Transformation Roadmap* (ATR) details Army actions to identify and build required capabilities now, allowing for better execution of joint operations by the Current Force while exploring the capabilities essential to provide relevant, ready, responsive, and dominant land power to the Joint Force in the future. The ATR complies with the DPG directive to report on how Army Transformation fully supports and is congruent with Defense Transformation efforts through the Future Years Defense Program (FYDP) (Figure 1-1). It fulfills the TPG requirement to demonstrate how the Army provides the capabilities through and just beyond the FYDP in support of the joint force commander's (JFC's) ability to execute emerging JOCs within the context of the JOpsC. The ATR also outlines the capabilities Army forces require from other Services within the context of Defense Transformation to meet the requirements of the JFC in the future.

Internal to the Army, the ATR is the Army Transformation Strategy and is an integral component of *The Army Plan* (TAP). It conveys clear direction to enable the integration and synchronization of Army-wide transformation efforts through the Army Transformation Campaign Plan (ATCP).

THE ARMY TRANSFORMATION STRATEGY

Transformation is a process that shapes the changing nature of military competition and cooperation through new combinations of concepts, capabilities, people, and organizations that exploit the Nation's advantages and protect against asymmetric vulnerabilities to sustain strategic position, which helps underpin peace and stability in the world. The Army derives its three-part Transformation Strategy from several sources:

- Department of Defense (DOD) mandates for transformation contained in the Defense Strategy and TPG
- A comprehensive joint view of the future operational environment
- JOCs that identify required Future Joint Force capabilities
- Operational experience that identifies both known shortfalls requiring change and promising improvements to joint and Army operations
- Exploration of technology advances and breakthroughs

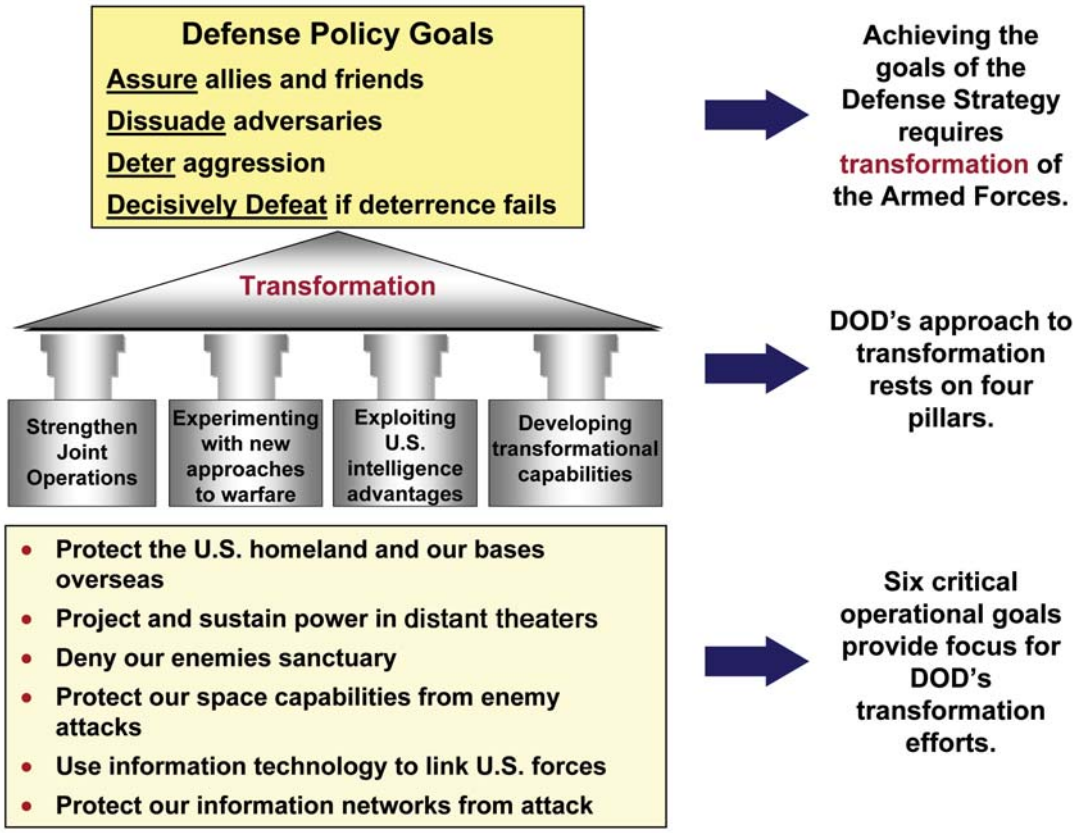


Figure 1-1. Defense Transformation Strategy Provides the Framework for Joint Guidance and Concept Development Efforts

These sources drive Army Transformation. Within Army Transformation, there remains a compelling need to strengthen and preserve the foundations of Army culture including Army Values, the significance of the Soldier, and the requirement to remain trained, ready, and responsive to the Nation and the JFC.

The complexity and uncertainty envisioned in the future operational environment reinforces the need for adaptation, innovation, and learning. Potential adversaries are developing capabilities and strategies that avoid the strengths of the U.S. military while tailoring their ability to attack perceived vulnerabilities. Others are developing asymmetric strategies to avoid or circumvent our current capabilities. These threats necessitate one absolute advantage the Joint Force and Army Forces must possess—superiority in the art of learning and adaptation. This is the imperative behind a culture of innovation in the Army and is the first element of the Army Transformation Strategy: Transformed Culture through Innovative Leadership and Adaptive Institutions.

With a culture for transformational change in place, what follows is the ability to identify and validate how the organization must change. Transforming the Nation's military capabilities while at war requires a careful balance between sustaining and enhancing the capabilities of the Current Force to fight wars and win the peace while investing in the capabilities of the Future Force. Joint concept development and experimentation, science and technology (S&T) investment, and future force designs that enable interdependent network-centric warfare will ensure that future capabilities meet the requirements of tomorrow's Joint Force. Simi-

larly, accelerated fielding of proven technologies and other improvements across DOTMLPF enhances the capabilities of the Current Force at war. The Army's Current to Future Force construct accounts for this balance and is the second element of the Army Transformation Strategy.

In the end, capabilities identification, programmatic, and risk analysis processes lead to the new combinations of concepts, capabilities, people, and organizations that enable the JFC to execute the JOCs successfully. To realize and infuse these combinations, the Army transforms the force through a continuous campaign to implement comprehensive DOTMLPF solutions throughout the force—Active Component (AC) and Reserve Component (RC), operating and generating forces. Army Transformation encompasses how Army operating forces[2] fight and how generating (institutional) Army forces[3] support operating forces and the Joint Force in accordance with the Army's Title 10 responsibilities to organize, train, equip, and provide forces for the combatant commanders and the joint team. Because capabilities are born joint, the resulting DOTMLPF programs and actions support Defense Transformation and are interdependent with the activities of the other Services and agencies. Transformed capabilities for interdependent joint operations through force transformation serve as the third element of the Army Transformation Strategy.

TRANSFORMED CULTURE THROUGH INNOVATIVE LEADERSHIP AND ADAPTIVE INSTITUTIONS

Regardless of concepts, capabilities, and technologies, it is important to remember that at the center of every joint system are the men and women who selflessly serve the Nation. Although the tools of warfare change, the dynamics of the human dimension, instilled through innovative leadership, remain the driving force in all military operations. Soldiers, infused with the Army's warrior culture, adapt to new mission demands, bear the hardships of combat, and win the peace. The human dimension of Army Transformation is the crucial link to the realization of Future Force capabilities and the enhanced effectiveness of the Current Force. To realize the full power of transformation, the Army seeks to embed a culture of innovation within its people and organizations to ensure innovative practices, processes, and activities emerge to produce required Joint Force capabilities.

The underpinnings of a culture of innovation exist within the Army today. In ongoing operations in Iraq and Afghanistan, Soldiers and leaders of courage and imagination adapt on an hourly basis to overcome determined adversaries. Indeed, the Army has an extraordinary record of anticipating and leading change. The development of the airmobile concept in the 1960s, the doctrine development and training revolution in the 1970s and 1980s, and the application of digital technologies of the 1990s were all remarkable innovations.[4]

Changing the Army's culture now, however, is not about introducing innovation. It is about changing how and when innovation occurs in the transformation cycle. Instead of processes constraining solutions, solutions must drive processes. Just as speed is critical on the battlefield, the pace of innovation must increase. New solutions result from seamlessly linking operat-

[2]Operating forces are those forces whose primary missions are to participate in combat and the integral supporting elements thereof. *Joint Publication 1-02*, 12 April 2001 as amended 5 June 2003, p 384.

[3]Under Title 10, United States Code (USC), the Army's generating force has the responsibility for providing management, development, readiness, deployment, and sustainment of the operating force. The generating force consists of the Army's institutional base, industrial base, and infrastructure spread across Headquarters, Department of the Army (HQDA), the Major Army Commands (MACOMs), field operating agencies, and staff support agencies. *Army Modernization Plan 2002*, p F-5.

[4] "*Adapt or Die" The Imperative for a Culture of Innovation in the United States Army*; HQ, U.S. Army Training and Doctrine Command White Paper, Coordinating Draft, 29 September 2003, p 2-3.

ing and generating forces through a continuous cycle of experience, feedback, learning, and experimentation. Innovation is accelerated as each person gains a feeling of responsibility to implement new and better ways to achieve organizational objectives.

Cultural change of institutions begins with behaviors of its people, and leaders shape behavior. The leadership challenge is to remove the impediments to institutional innovation through a wide range of behaviors that over time produce a culture that embraces transformation. Ultimately, the ability to rapidly adapt processes and resulting DOTMLPF solutions to satisfy the Nation's requirements for its armed forces will be the measure of the Army's agility—and proof of its culture of innovation.

The culture of innovation also involves understanding the optimal way to achieve goals and then possessing the resolve to overcome institutional inertia. The culture must reflect a joint and expeditionary mindset that views all operations and actions from a joint-first perspective. This way of thinking must reside in joint training, education, and leader development programs implemented at all levels within the Army. Further, the culture of innovation must be applied to developing and fielding capabilities for the Joint Force (see Chapter 8).

TRANSFORMED PROCESSES—RISK ADJUDICATION USING CURRENT TO FUTURE FORCE CONSTRUCT

As the Joint Force transforms, the Army—in coordination with sister Services—develops transformational capabilities from an inherently joint perspective. Development begins with a close examination of the future joint operational environment, where uncertainty, complexity, and adaptive adversaries demand a capabilities-based approach. This scrutiny proceeds to development of an overarching articulation of how the Joint Force operates in the future across the range of military operations, as described in the JOpsC. The sequence then leads to JOCs, which describe how a JFC will plan, prepare and execute joint operations across the full range of military operations. JOCs guide the development of joint tasks and ultimately desired joint capabilities required for success. These are then further refined in joint functional concepts that integrate related military tasks to attain capabilities required across the range of military operations. The Army structures transformation within the context of these joint concepts. Indeed, the success of Army Transformation ultimately depends on the success of Joint Transformation and the generation of new capabilities for interdependent joint warfare.

The Army frames the constant change of transformation through the interaction of the continuously evolving capabilities of the Current to Future Force (Figure 1-2). 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. Designed to provide the requisite land power capabilities JFCs need across the range of military operations, the Current Force's ability to conduct MCO underscores its credibility and effectiveness for full-spectrum operations and fulfills the enduring obligation of Army forces to fight wars and win the peace.

The Future Force is the operational force the Army continuously seeks to become. Informed by national security requirements and DOD guidance, the Future Force is the strategically responsive, joint interdependent, precision maneuver force, dominant across the full range of military operations envisioned in the future global security environment. Optimized for strategic versatility, this lighter, more lethal, and agile force will dominate land operations in any future conflict, executing seamless transitions from peacetime readiness to smaller scale contingencies, MCO, or Stability Operations (SO).

The Army possesses and refines capabilities to enable the Current Force to conduct joint operations in the near term while it simultaneously develops transformational capabilities for the

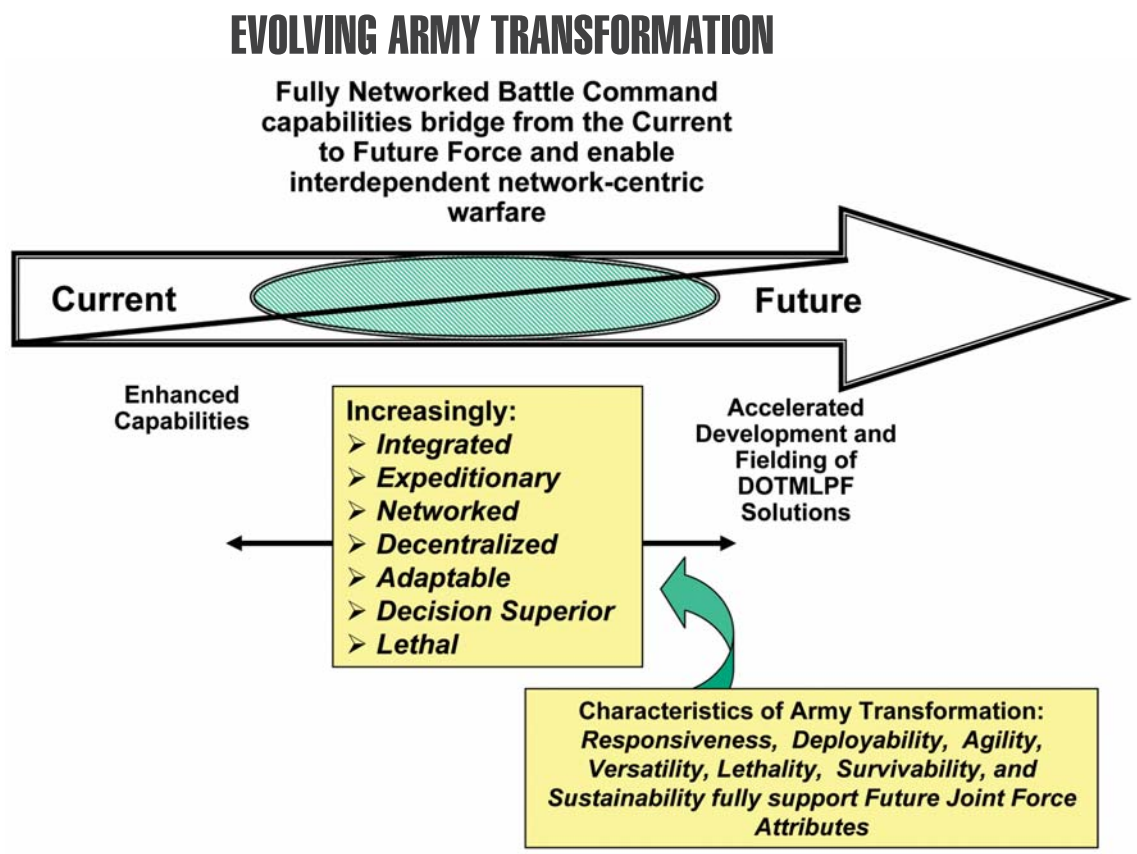


Figure 1-2. Current to Future Force Construct

Future Force. The two activities are symbiotic. While the Army develops the Future Force, it simultaneously accelerates select Future Force DOTMLPF capabilities to enhance the Current Force. Similarly, the operational experience of the Current Force directly informs further progress toward Future Force capabilities. Figure 1-2 depicts this continuum as the shaded area, a transitional zone.

Army Transformation leverages Current Force operational experience, the insights from innovative joint concept development and experimentation processes, and S&T to enhance as rapidly as possible the responsiveness, readiness and capabilities of the Current Force while pursuing Future Force capabilities. This dynamic relationship constantly changes the composition and nature of both the Current Force and Future Force. This relationship requires careful consideration and balancing of operational, future, force management, and institutional risks to determine what DOTMLPF capabilities to accelerate or pursue, and when and how to introduce them into the force while sustaining the Army's ability to meet combatant commanders' operational needs (see Chapter 9 for an expanded discussion of risk).

The Current to Future Force construct provides a framework to base smart business decisions that reduce Current Force risks and provide greater force capabilities per dollar. The Army is pursuing a range of actions to enhance Current Force capabilities while developing the Future Force. Modular, capabilities-based unit designs; the Force Stabilization and Unit Manning System; and networked battle command capabilities are three examples of ongoing Army efforts to create smaller, faster, lighter, and more lethal Army forces for interdependent joint operations now and into the future. These and other actions are explained in greater detail in subsequent chapters.

The JOpsC identifies seven Joint Force attributes that the Future Joint Force must embody to achieve full-spectrum dominance.[5] The Army's Future Force characteristics that have guided Army Transformation over the past several years remain relevant and fully support Army efforts to enhance Future Joint Force attributes (Figure 1-2).[6] By increasing capabilities to achieve these attributes and implementing the JOpsC and the JOCs, the Army remains committed to providing relevant and ready capabilities to the joint team.

Fully Integrated. The Joint Force must move beyond deconfliction to integrate elements with all functions and capabilities focused toward a unified purpose, to include greater coordination with interagency and multinational partners.[7] Providing the right mix and balance of capabilities is paramount to expanding the range of options available to the JFC. An interdependent, full-spectrum dominant Joint Force requires born joint capabilities. Service capabilities must complement each other. The Army must ensure integration of Army concepts, doctrine, and force design with current to future capabilities of the other Services; maintain the appropriate and versatile mix of capabilities; and determine the right balance of AC and RC forces.

Future Joint Force Attributes

- Integrated
- Expeditionary
- Networked
- Decentralized
- Adaptable
- Decision Superior
- Lethal

Expeditionary. Delivering the right Army forces at the right place and time is essential to a JFC's ability to defeat any adversary or control any situation across the full range of military operations. As the Army rebalances, repositions, and reconfigures its forces incorporating unit stabilization and generating unit rotations, it does so with the notion of expanding the JFC's ability to rapidly and responsively deploy, employ, and sustain forces throughout the global battlespace in any environment, against any opponent, and seamlessly transition to sustained combat operations. Army forces, including the generating force and the institutional Army, will embody a joint and expeditionary mindset—one that embraces the need for Army forces to achieve and leverage joint interoperability and interdependence for deployment, employment, and sustainment.

Networked. Information superiority and situational understanding are critical enablers for future joint operations. Operating in the collaborative information environment, Army forces will harness the power of the ongoing revolution in information technology to aid in the fusion of data and information to develop actionable and predictive intelligence and to link people and systems—horizontally and vertically—within the joint network to increase situational understanding. Army battle command capabilities enable interdependent network-centric warfare within joint, interagency, and multinational full-spectrum operations, allowing the Joint Force to see first, understand first, act first, and finish decisively with revolutionary speed and knowledge superiority.

Decentralized. Decentralized describes a Joint Force that leverages the power of integrated joint capabilities and operates "joint" at lower echelons.[8] Decentralization enhances decision making and enables the Joint Force to gain and

[5] *Joint Operations Concepts*, Joint Chief of Staff (JCS) Version 1.0, Department of Defense, 3 Oct. 2003.

[6] Army Future Force characteristics (also known as enduring characteristics of Army Transformation): responsive, deployable, agile, versatile, lethal, survivable, and sustainable, as listed in the initial *Army Transformation Roadmap*, published 6 June 2002.

[7] Joint Operations Concepts, p 14.

[8] Joint Operations Concepts, p 15.

maintain initiative and sustain operational momentum during the conduct of simultaneous, distributed, and noncontiguous operations. Army forces exploit the shared situational awareness afforded by global, robust Joint command and control (JC2) and intelligence to collaboratively plan and self-synchronize operations.

Adaptable. Modular, capabilities-based Army force designs enable greater capacity for tailorable force capability packages and improve the strategic responsiveness of the Joint Force for full-spectrum operations. Versatile and agile Army forces enable the JFC to conduct prompt and sustained full-spectrum operations by retaining the ability to adapt to changing mission requirements without losing operational momentum. Agile forces enhance the conduct of operational maneuver from strategic distances and the exploitation of the vertical dimension of the battlespace.

Decision Superior. Decision superiority is the state at which better-informed decisions are arrived at and implemented faster than an adversary can react, or in a noncombat situation, at a tempo that allows the force to shape the situation or react to changes and accomplish its mission.[9] By leveraging fully networked Joint Force battle command capabilities, the Army and JFCs receive the operational advantage of information superiority to see first, understand first, act first, and finish decisively.

Lethal. Lethality describes increased and refined Joint Force capabilities to destroy an adversary in all conditions and environments.[10] Within joint operations and enabled by decision superiority, Army forces generate and sustain combat power to deliver attacks, kinetic and nonkinetic, on enemy centers of gravity with decisive effects and at a time and location of the JFC's choosing.

Joint Force attributes and joint concepts translate strategic guidance into the operational context required to distill desired joint capabilities. With this joint perspective and an appreciation of the joint operational environment in mind from the beginning, the Army develops warfighting concepts. The Army, in collaboration with other Services, conducts experimentation, detailed task analysis, and capabilities assessment through the Joint Capabilities and Integration Development System (JCIDS) to develop the capabilities that operationalize these concepts. The development of these capabilities drives programs, policies, and activities across DOTMLPF. The result is transformed Army forces capable of dominating the highly complex land environment in interdependent joint operations now and in the future.

TRANSFORMED CAPABILITIES FOR INTERDEPENDENT JOINT OPERATIONS THROUGH FORCE TRANSFORMATION

Defense Transformation seeks to change the way joint forces employ operational capabilities across the full spectrum of operations within the context of JOCs. Army Transformation achieves enhanced operational capabilities over time and integrates those capabilities into the Current and Future Forces to gain synergies that support JOCs. This adaptation and synergy must occur even as JOCs evolve.

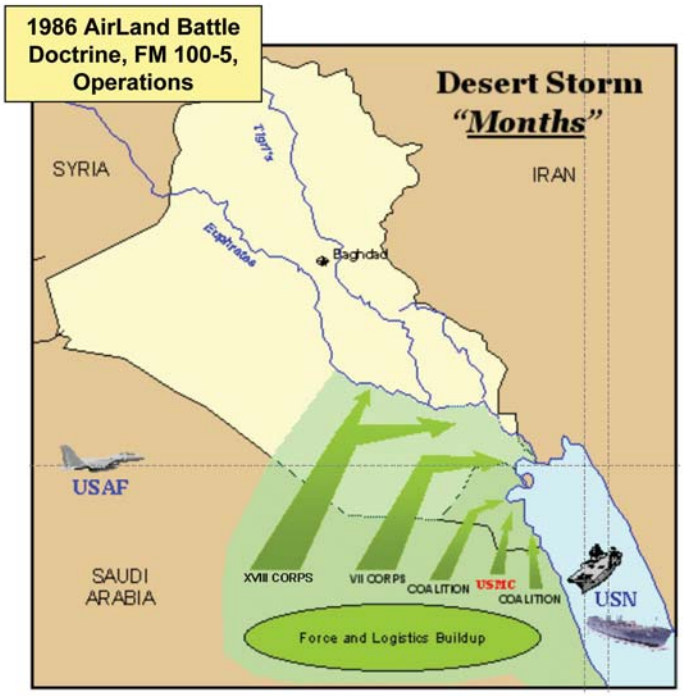
Figures 1-3 through 1-5 illustrate this idea and highlight the linkages between concepts and capabilities. Each snapshot represents evolutionary and revolutionary changes in the ways Army forces have fought and will fight within the framework of joint operations. It is important to view each operation through the lens of its corresponding operational concept.

Operation Desert Storm (Figure 1-3) was the model of AirLand Battle Doctrine. This campaign was the unmatched combination of sequential, contiguous, and linear operations and was the sum of Army force combined arms.

[9] Joint Operations Concepts, p16.

[10] Joint Operations Concepts, p16.

OPERATIONAL CONCEPT (DESERT STORM)



- **Sequential,** contiguous, linear operations
- **Fight after buildup** at major ports and airports
- **Coordination** thru terrain management/plans; intelligence by contact and direct observation
- **Attrition** of enemy forces with massed formations
- **Large logistics tail** with large footprint forward
- **Deconflicted Joint** operations
- **Generating Force** focus on mobilization, deployment support, and equipment modernization

Figure 1-3. Operation Desert Storm

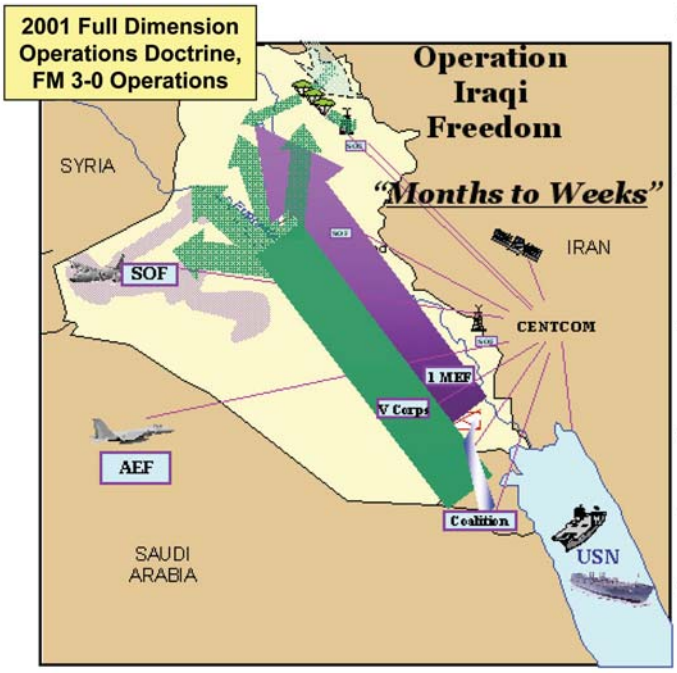
More than a decade later, Operation Iraqi Freedom (Figure 1-4) employed full dimension operations doctrine. This campaign featured increasingly joint, multidimensional operations, and displayed simultaneous attacks distributed throughout the area of operations. Enhanced joint and Army battle command capabilities enabled commanders to better integrate information with corresponding decisions. Building on this experience within a joint context, Future Force operations (Figure 1-5) envisioned by the 2015 Future Force Operational Concept fully leverage the synergy of the Joint Force.

Characterized by simultaneous, distributed, noncontiguous, and nonlinear operations, Future Force campaigns embody interdependent, network-centric, effects-based operations. The Future Force enhances and enables full-spectrum dominance by the Joint Force.

A full-spectrum capable Joint Force that can see first, understand first, act first, and finish decisively will successfully execute the JOCs. Seamless joint, interagency, and coalition battlespace awareness (BA) comes from the correlation of fused data and information from strategic to tactical intelligence, surveillance and reconnaissance. This quality allows the JFC to identify enemy centers of gravity and vulnerability points. The JFC can apply force directly at those areas with precise effects using more responsive, lethal, modular, and scalable joint and combined forces. This capability enables the Joint Force to bypass enemy strengths and nullify its asymmetric strategies.

Current and future JFCs need a broad array of multidimensional options to execute JOCs. Knowledge-based Army forces exploit advanced information technologies and space-based assets to enable network-centric battle command, fully integrated within the joint, interagency, and multinational environment. Unlike past predictable operations, Army forces respond within days and fight on arrival in the Joint Operations Area

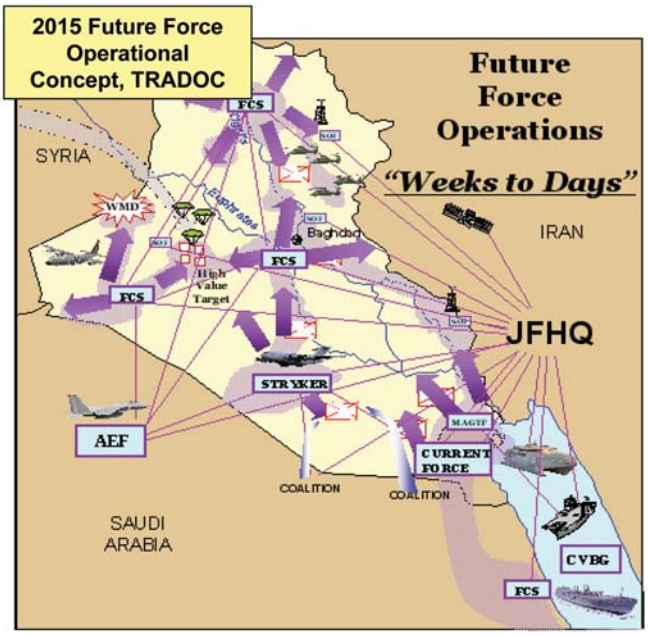
OPERATIONAL CONCEPT (OIF)



- **Simultaneous** attacks ground before air, linear and nonlinear
- **Fight on buildup** at major ports and airports
- **Coordination** thru terrain management/plans; integrated intelligence, increased digitization in battle command
- **Destruction** or dispersion of enemy by overwhelming maneuver and fires
- **Reduced Logistics Footprint** with some reachback
- Increasingly **Joint,** improved **integration**
- **Expanded Role of Generating Force** for force projection, critical node security, mobilization for campaign depth and unit rotations

Figure 1-4. Operation Iraqi Freedom

OPERATIONAL CONCEPT (FUTURE FORCE)



- **Simultaneous,** distributed, nonlinear operations
- **Fight on arrival** at multiple austere entry points
- **Self-synchronization** thru shared, enhanced situational awareness from global and robust Joint command and control (JC2) and intelligence
- **Directly attack centers of gravity** with precision effects
- **Small logistics footprint** with reachback
- **Interdependent Joint Operations** that achieve rapid defeat through dislocation and disintegration
- **Generating Force** conducts force projection, critical node security, mobilization and force management for prompt and sustained operations

Figure 1-5. Future Force Operations

(JOA) through multiple entry points. These capabilities allow the JFC to preempt enemy actions, assure access, seize the initiative, and shape the battlespace. Army forces accelerate conflict resolution through multiple simultaneous actions to deny the enemy sanctuary and to rapidly achieve the operational disintegration required for joint campaign success.

While development of the Future Force contributes to military dominance of the future Joint Force, the current Joint Force and the Army are in one of the most challenging periods in the Nation's history. Failure in the current fight is unthinkable. Transformation during a time of sustained campaigning is not easy, but the Army is building on the progress of the past several years to start transforming the Current Force. The U.S. Army Training and Doctrine Command (TRADOC), with its newly established Futures Center and in concert with a range of supporting Army commands and organizations, is exploring changes to organizations, processes, doctrine, and culture to provide dominant land power capability to the Joint Force in a more prompt and rapid manner.

By developing more modular, strategically responsive organizations while cultivating and institutionalizing a joint and expeditionary mindset throughout the force, the Army significantly increases the combatant commander's ability to rapidly defeat any adversary or control any situation across the range of military operations. Modular, capabilities-based forces better support combatant commander requirements by easing the burden of delivering the right Army capabilities at the right place and time. This attribute is central to optimizing the relevance of Army forces to the combatant commander.

Modular, capabilities-based Army force designs enable the JFC to create rapidly deployable and tailorable force capability packages. Modular combat support and combat service support units with reduced logistics footprints, as well as sense and respond logistics capabilities, are essential to responsiveness. They enhance the versatility of the joint force to seamlessly transition to sustained operations as a crisis or conflict develops. Informed by operational experience and Future Force designs, the Army will begin in FY04 to implement this modularity in two of its AC divisions. These initial conversions will serve as prototypes to help accelerate the modular redesign and fielding of the Current and Future Forces.

Moving toward completely independent echelon above brigade headquarters will also enhance modularity. In accordance with the Unit of Employment (UE) construct, a $UE_{X,}$ or higher tactical headquarters, and a $UE_{Y,}$ or operational-level headquarters, will provide the command and control (C2) structure into which modular, capabilities-based Units of Action (UAs) are organized to meet combatant commander requirements. Both types of UE headquarters, while being able to accept joint capabilities such as a Standing Joint Force Headquarters (SJFHQ) element, will have an organic capability to perform functions as a Joint Task Force (JTF) or Joint Force Land Component Command Headquarters (JFLCC HQ), based on the contingency.

The Army's ability to successfully provide the joint team both rapid expeditionary capabilities and the ability to conduct sustained land campaigns across the full spectrum of conflict requires both AC and RC contributions. We will restructure the Current Force, creating modular capabilities and flexible formations while obtaining the correct mix between AC and RC force structure. This rebalancing effort will enhance the Army's ability to provide the joint team relevant and ready expeditionary land power capability (Figure 1-6). Our AC will provide rapidly responsive, agile, and expeditionary forces that typically respond in the first 15 days of an operation. The availability of adequate AC and RC follow-on forces provides the JFC the campaign quality combat, combat support, and combat service support capabilities necessary to achieve operational and strategic objectives and to conduct sustained land operations. Our RC

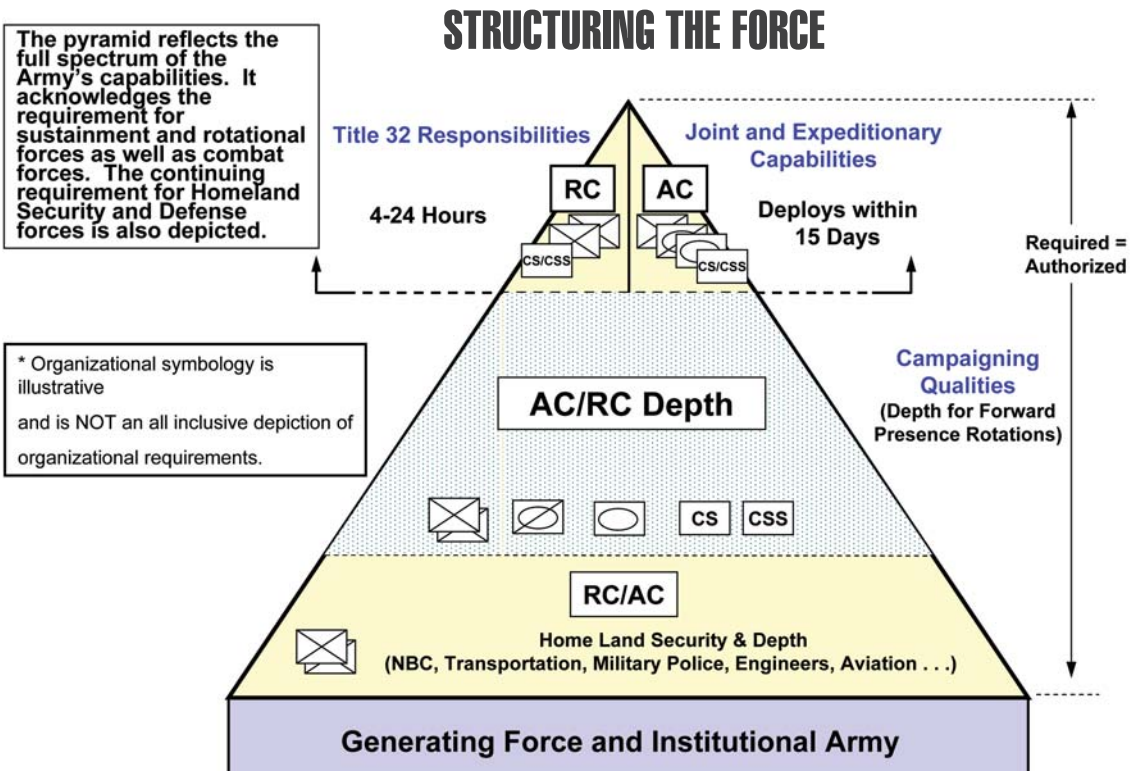


Figure 1-6. Structuring the Force

will provide strategic depth to reinforce both the warfight and support and stability operations (SASO), as well as lead our efforts to protect the homeland. Either AC or RC units may provide units of the other component with additional capabilities not normally resident in those forces. To create and maintain rapidly deployable and sustainable campaign capability and depth throughout the force, we will ensure both AC and RC forces are modular, tailorable, and capable of coming together in a number of force and capabilities packages. This will allow us to reduce the time now required for mobilization and training and improve our ability to provide combatant commanders with needed forces and capabilities.

Redesigning the force requires a complementary and transformational method of building a cohesive team within those organizations. The Force Stabilization and Unit Manning System for brigade UAs and other modular and scaleable forces will provide combatant commanders with more combat-ready formations. The Army will define and develop a plan to implement unit manning concepts beginning in FY04. The Army-wide Force Stabilization and Unit Manning System will then be implemented to complement a rotation-based system for sustained global engagement. This system will also take Soldiers and families into account. Home basing will stabilize Soldiers and their families at installations for extended tours. While some Soldiers may be sent to unaccompanied tours, they will return to their home base.

Battle command capabilities enable interdependent network-centric operations within a joint, interagency, and multinational environment across the full spectrum of operations. The Army must accelerate the Future Force network to enhance the joint battle command capabilities of the Current Force. Building on recent efforts to analyze the development of current network architecture and supporting systems, the Army will reprioritize development of the network to focus on top-down fielding to the Current Force. The Army will leverage experiences and lessons learned in Operation Enduring Freedom (OEF) and OIF to enhance joint battle command, in-

cluding battle command on-the-move (BCOTM) and blue force tracking (BFT) capabilities for select Current Force units. To ensure operating forces have the most advanced capabilities, the Army will synchronize fielding of battle command capabilities with unit rotation schedules. The Army will continue to partner with Defense agencies, other Services, the Joint Staff, and Joint Forces Command (JFCOM) in all aspects of network development.

In parallel with transforming operating forces, the Army will continue to transform the generating force. This requires that the institutional Army supports the Current Force and the Future Force simultaneously. Within a constrained resource environment, a constant force management risk assessment is necessary to balance the need of the institutional Army to prepare for the Future Force and at the same time support Current Force readiness. This balancing also requires a continuous and comprehensive review and refinement of business practices. The future Army must have an integrated, global reachback capability that enables the exchange of electronic information over secure, worldwide networks and provides increased responsiveness to the Army's fielded forces.

Joint and Army Transformation will continuously provide new and enhanced capabilities to the Current Force while striving toward Future Force operational capabilities. The evolving JOCs reflect that reality. The JOCs also imply a capacity to conduct operations globally, in conjunction with one another, and to transition between them. The capabilities to conduct MCO will underwrite the Joint Force's ability to conduct stability operations, strategically deter potential foes and, most importantly, secure the homeland. The ATR addresses each of the four cornerstone JOCs in terms of joint and Army capabilities grouped by the functions of force application, battle command, protection, and focused logistics.

The Army Transformation Strategy is congruent with and fully supports the Defense Transformation Strategy and a Nation at war. Army Transformation provides expanded capabilities for the Joint Force. The Army's Current and Future Forces, possessing a joint and expeditionary mindset, meet America's enduring need for land power to enhance regional stability, achieve decision in war and to win the peace during post-conflict operations.

SUBSEQUENT CHAPTERS

The Army is developing transformational capabilities to enable the emerging JOCs. Chapter 2 details battle command and its role in bridging Current to Future Forces. Chapters 3 through 6 discuss capabilities the Army provides to the Joint Force and articulates interdependencies with other Services and agencies for each of the four JOCs currently under development—Major Combat Operations, Stability Operations, Strategic Deterrence, and Homeland Security. Chapter 7 addresses other transformation initiatives: Concept Development and Experimentation, Science and Technology, Transformation of Army Business Practices, and Interoperability. Chapter 8 outlines the concrete steps the Army takes to achieve transformational capabilities. Chapter 9 discusses how the Army balances operational and future risks as it resources transformation. Finally, in Chapter 10, the ATR provides insights beyond the far-term horizon of the TPG to guide future investment decisions. The annexes discuss specific programs and efforts and provide a more detailed programs-to-concepts crosswalk.

BATTLE COMMAND 2

Battle command is the art and science of applying leadership and decision making to achieve mission success. Battle command encompasses the functions of leadership (providing purpose, motivation, and direction) and decision making. Enabled by command, control, communications, and computers (C4) and intelligence, surveillance, and reconnaissance (ISR), battle command enhances the commander's ability to gain information and decision making advantages over any adversary. Figure 2-1 portrays these relationships.

Fully networked battle command capabilities are the bridge from the Current to Future Forces and enable the JFC to conduct fully interdependent, network-centric warfare. The Army views battle command as the essential operational capability that fundamentally enables the conduct of future joint operations. To implement the JOpsC and JOCs and achieve decision superiority, the Future Joint Force will exercise battle command within an inherently joint, top-down network that provides common situational awareness. This chapter describes evolving joint concepts of C2 and BA, and how Army battle command capabilities complement these maturing concepts. Chapter 8 details specific Army battle command initiatives.

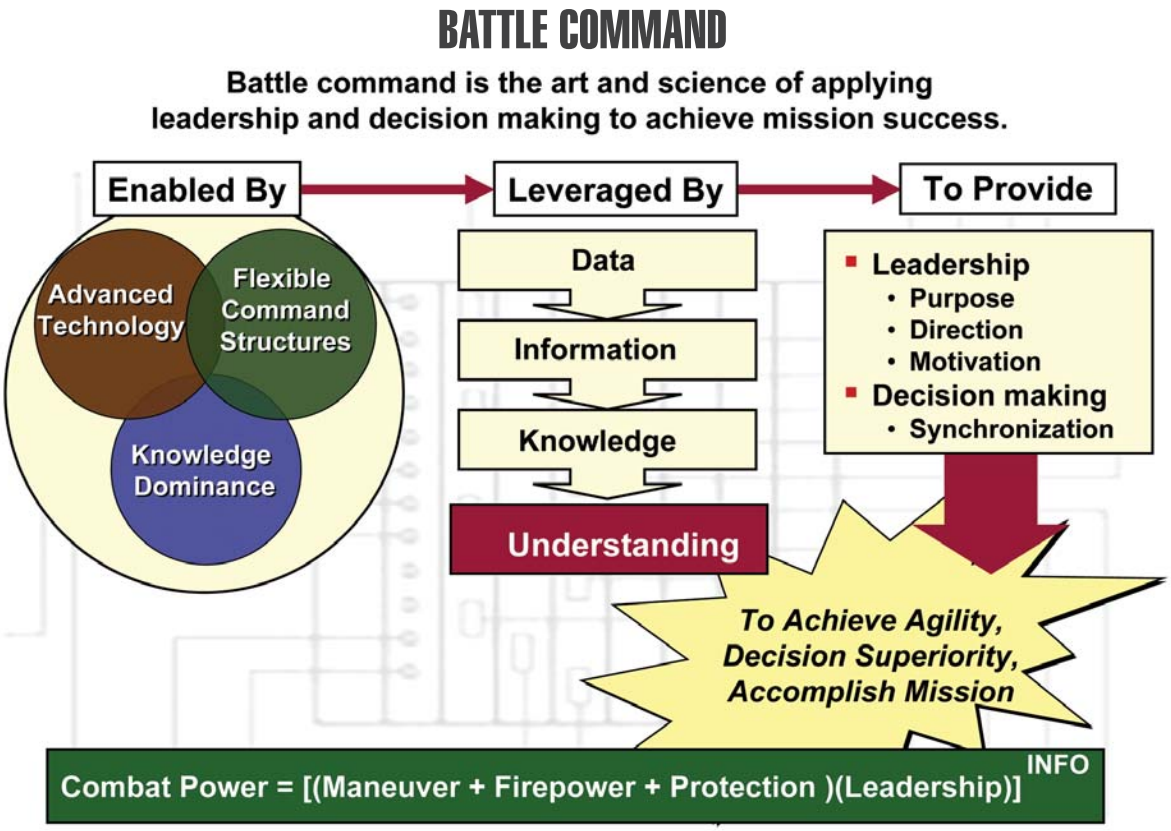


Figure 2-1. Battle Command

THE CONTEXT OF JOINT COMMAND AND CONTROL

The Army's battle command concept and strategies are consistent with emerging JC2 and BA functional concepts within the JOpsC. Additionally, the QDR's Transformation Pillar, Developing Transformational Capabilities, emphasizes the importance of leveraging information technology and innovative concepts to develop an interoperable, joint C4 and ISR architecture. The challenge is to meet the JFC's needs with Current Force capabilities while simultaneously developing enhanced capabilities for the Future Force. Figure 2-2 depicts the context of battle command supporting the JOpsC, including JC2 and the Global Information Grid (GIG). Battle command expands the BA of the JFC.

Figure 2-2. Battle Command in the Joint Context

JOINT FORCE COMMAND AND CONTROL AND BATTLESPACE AWARENESS [11]

Current and future JFCs rely on capabilities that enhance the speed of command. The joint functional concepts of C2, BA, Focused Logistics, Force Application, and Protection define joint warfighting across the range of military operations. The JC2 functional concept is the overarching concept. It describes how C2 will be performed to achieve success when executing the missions and operations described by the JOCs. This JC2 concept and its defined C2 functions also provide a foundation for the other functional concepts since the C2 function is resident and required for successful implementation of all concepts.

Command and control is the exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission.[12] The Joint Command and Control functional concept reflects that C2 is fundamentally a human activity enabled by technology and the organization. The concept categorizes capabilities into three domains: cognitive, organizational and technical.[13]

The Joint command and control functional concept states that the overarching attribute is agility, an attribute that describes a C2 system that enables the commander to respond quickly and appropriately in a rapidly changing and complex situation.[14] Additionally, the concept lists, defines, and associates the following supporting attributes: superior decision making, shared understanding, flexible synchronization, simultaneous C2 processes, dispersed C2, responsive and tailorable organizations, full-spectrum integration and robust networking.

The functional concept for BA provides the basis for future BA capabilities and outlines the

[11] Joint Command and Control Functional Concept Version 0.6.6, 5 September 2003.
[12] *Joint Publication* 1-02, p 79-80.
[13] Joint Command and Control Functional Concept Version 0.6.6, 5 September 2003, p 10-11.
[14] Joint Command and Control Functional Concept Version 0.6.6, 5 September 2003, p 21.

importance of timely ISR to decision making. The concept defines four enabling concepts—All-Source Collection, Environmental Data Collection, Knowledge Management, and Predictive Analysis—which provide the basis to define and develop Joint Force capabilities. Consistent with Joint Command and Control, the BA functional concept is commander-centric—highlighting the role of the JFC as the focal point to direct and guide functions.

BA includes the ability to predict the future battlespace environment, a capacity beyond providing information on current status and disposition. When fully achieved, BA will enable commanders at all levels to make timely, accurate decisions based on credible predictions of adversarial intent and probable courses of action.

At its core, BA represents harnessing the intellectual and technical power of the networked force to ensure commanders at all levels have the information they need to make decisions inside the adversary's decision cycle. This information has several unique characteristics—latency, context, and synergy—that drive requirements for the BA Functional Concept (BAFC):

- Latency means that the value of information tends to decrease with time; therefore, the information must be made available and shared as soon as possible. BA requires information fusion at the earliest possible points.
- Context refers to the concept that raw data is not equivalent to information. Context is what is applied to data that is not self-evident to the user. Data has only limited value until it has been put into a context that enables decision making.
- Synergy means that particular information becomes more valuable when considered in light of other related pieces of information. BA will include automated data tagging to enable rapid searching of stored databases as well as data fusion.[15]

The JFC is enabled by and leverages Service and national capabilities to provide precise, fused intelligence at all levels of war to facilitate decision superiority.[16] Achieving decision superiority relies on gaining and maintaining information superiority, the advantage over an adversary to see and understand first. Information superiority is accomplished with networked sensor inputs, which provide accurate and timely information to see the environment, friendly forces, and adversarial forces. This confers a warfighting advantage to the commander because he is able to direct actions inside an adversary's decision cycle. Networking the Joint Force also provides commanders at all echelons a collaboration advantage, resulting in synchronized actions in time, space, and purpose-maximizing lethality and effect.[17] Networking the Joint Force is essential to enabling JFCs to achieve success when executing missions and operations described in the JOCs.[18] In addition to supporting the JFC, networking enables vertical and horizontal ISR integration.

ARMY BATTLE COMMAND

The Joint Command and Control functional concept and the battle command concept are commander-centric. They exploit technologies to achieve an advantage that allows a commander to see, act, achieve situational awareness and understand better and faster than his adversary. Battle command bridges Army readiness with transformation efforts. It provides the foundation that enables the Army to maintain readiness and improve its Current Force capabilities while changing the way it deploys, fights, and uses information. Battle command involves

[15] Functional Concept for Battlespace Awareness Draft, 5 September 2003, p 15.
[16] Joint Operations Concepts, JCS Version 1.0 for 2003, p 12-13.
[17] Joint Operations Concepts, JCS Version 1.0 for 2003, p 15.
[18] Joint Operations Concepts, JCS Version 1.0 for 2003, p 12-13.

The Army Perspective of Battle Command

Joint Funtional Concepts

Command and Control + Battlespace Awareness = Battle Command

understanding and applying decision making to gain and maintain the advantage and accomplish the mission while providing leadership throughout the operations process (plan, prepare for, and execute while assessing continuously).

The following battle command attributes describe the qualitatively different ways the Army will execute battle command in the future. The battle command concept aligns with Joint Command and Control and BA to satisfy Army and Joint needs. The first three attributes are largely independent of technology development. They are supported by information, but they depend on changing mindsets and organization. The next five attributes depend on the development and fielding of improved technology. The last group is a hybrid of organization, mindset, and technology.

Cognitive Domain	Description
Commander-driven, Purpose-oriented, knowledge-based mission orders.	Very high tempo, widely distributed, simultaneous land operations in a complex environment will overwhelm any leader or system that attempts to centrally control execution. Decentralized execution by all arms becomes mandatory. Maximum initiative within commanders' intent will allow application of combined arms at the tempo envisioned.
Echelonment of Command is not the same as Echelonment of Unit Formation	The completely flexible tailoring of forces is central to combined arms warfare and dominant maneuver. The appropriate mix of battle command, maneuver sustainment, and maneuver support is mission dependent and not tied to organizational convenience.
Battle Command Resourced for Sustained Operations	The Battle Command System (BCS) must be structured and resourced for distributed and continuous operations in terms of distance and duration.
Technical Domain	**Description**
Battle Command—Anytime, Anywhere	High tempo, fluid maneuver from strategic distance will require command presence, either virtually or physically, based on time and distance factors at the points of decision across vast areas. The BCS must allow commanders to command and control effectively, from alert through redeployment, from whatever location in the battlespace that the commander desires.
Teaming Commanders and Leaders—On-Demand Collaboration	Distributed operations and high tempo maneuver will demand rapid synchronization, swift adaptation of plans and control measures, flexible groupings of distributed staff elements, and direct exchanges between commanders across hierarchies.

Technical Domain	Description
Fully Integrated	Joint interdependence demands that Army forces dominate maneuver, execute precision fires, efficiently support Army and joint elements, and provide full-dimensional protection. Land forces will complement the joint fight and reinforce each other throughout the campaign. Additionally, the BCS will enable more effective interagency and multinational operations.
One Battle Command System	The BCS empowers commanders to execute combined arms operations effectively. The same system that controls wartime operations will regulate activities in garrison and in training. Because the BCS is part of the Joint system, Army forces will support and be supported by joint elements. The BCS will eliminate the requirement for individual stovepipe battlefield operating systems and capitalize on the access and services provided by Network-Centric Enterprise Services (NCES)/Global Enterprise Services (GES).
Unprecedented Information Network Dependability	A multitiered network that supports battle command by allowing commanders to reach back across tactical and theater boundaries and intercontinental distances to Home Station Operations Centers (HSOC) and Knowledge Centers (KC) to access and share actionable information. The BCS will allow humans to apply judgment and experience exploiting vast amounts of information managed more effectively while enhancing data integrity by all users pulling data from original source vice pulling data from anecdotal databases. The network will support seamless information flow between global maneuver, maneuver support, and maneuver sustainment to support battle command.
IT + Culture	**Description**
Modular, Scaleable, Tailored Battle Command	Highly tailored and responsive forces will require battle command matched and positioned precisely for theater needs. Just as Army forces are task organized, the BCS enabled by NCES will constantly adapt, move, expand and contract in size and adjust capability as the situation demands.
Dramatically Smaller Deployed Footprint	The pace and scope of maneuver, in and outside the theater, mandates a BCS that is equally maneuverable. A goal of the BCS is to reduce the footprint of command posts to enable them to be more tactically, operationally, and strategically responsive.

When the battle command attributes above are fully implemented, networked forces will possess the capabilities to adjust rapidly to changing situations and synchronize their efforts in-stride (during execution), with minimal intervention or direction. To achieve these particular attributes and enhance the capabilities of the Current Force, the Army has developed and is implementing a Battle Command Way Ahead Strategy.

This strategy is capabilities-based, encompasses the intent of Joint Battle Management Command and Control (JBMC2), and applies lessons learned from OIF. The intent of the strategy is to provide improved capabilities through technology inserts that are distributed across the Current Force. The intent is also to ensure that all units share the same capabilities and are interoperable throughout the Joint Force. The strategy provides for the standardization of battle command capabilities by unit type and echelon for both Current and Future Forces. Recognizing the hybrid nature (Current and Future Forces) of the Army at any given point in time, it is important that capabilities of Current Forces will be interoperable with Future Forces, particularly within the context of the Army FCS.

Like Army Transformation described in Chapter 1, battle command is more than materiel solutions—it spans all DOTMLPF domains. Indeed, battle command requires skilled judgment gained from practice, reflection, study, and intuition. In concert with enhanced materiel solutions, the Army is pursuing a number of initiatives that will strengthen battle command of Army forces in joint, interagency, and multinational operations. Specific examples:

- Leader development programs supported by enhanced live, virtual, and constructive (LVC) training and simulations.
- Army Combat Training Centers including the Joint Readiness Training Center (JRTC), National Training Center (NTC), Combat Maneuver Training Center (CMTC) and the Battle Command Training Program (BCTP). Refocused training programs complement a joint and expeditionary mindset, support Joint National Training Capability (JNTC), accurately replicate the contemporary operating environment, and better enable commanders to develop subordinate leaders.
- Implementation of the Army Digital Training Strategy (ADTS) for both operating forces and the institutional Army. This strategy is linked to force rotation plans for Army forces in support of the Global War on Terrorism (GWOT).
- Experimentation with Soldiers at the center of every system. Results of experimentation will inform both Current and Future Force battle command capabilities.
- Modular, capabilities-based unit designs that enable greater capacity for rapid packaging and responsive, sustained employment in joint, interagency, and multinational operations.

The following four chapters describe Army capabilities and joint interdependencies required for successful execution of the JOCs. Important to each is the successful exercise of battle command by Army force commanders and the JFC. To dominate any adversary or situation in full-spectrum operations, the ability to see first, understand first, act first, and win decisively is contingent on commanders at all levels successfully exercising battle command.

MAJOR COMBAT OPERATIONS JOINT OPERATING CONCEPT (MCO JOC) 3

The global nature of U.S. security interests and security relationships, and the unpredictable and ambiguous security environment, including adaptive adversaries that employ conventional and unconventional capabilities using asymmetric means, demand a military with a global perspective of the battlespace and the ability to conduct simultaneous operations across the range of military operations in multiple regions of the world. Within this environment Army forces, and the joint teams to which they belong, are designed, organized, and trained for responsive and successful execution of JOCs, and rapid transition between the mission sets, tasks and conditions inherent in the JOCs. Each JOC is not a stand-alone operation or mission set; in fact there is a fundamental, yet complex, interrelationship among the four cornerstone JOCs [Major Combat Operations (MCO), Stability Operations (SO), Homeland Security (HLS), and Strategic Deterrence (SD)].

The HLS and SD JOCs are inextricably linked to their like-named strategic imperatives. By their very nature these two JOCs are, and will continue to be, continuous and ongoing regardless of major combat or stability operations, with a decidedly interagency flavor. They include continental United States (CONUS) and outside the continental United States (OCONUS) operations and actions, which play a key role in shaping the security environment for successful MCO and SO.

Stability Operations may be distinct operations, but they are also inherently part of MCOs, especially, but not exclusively, in pre- and postconflict phases. Forces must have the capabilities and modularity to rapidly transition between specific mission sets and tasks within each JOC, as well as the training and adaptability to be comfortable doing so. Major Combat Operations are the ultimate military coin of the realm for a global power. The ability to rapidly and successfully prosecute MCO anywhere has fundamental deterrent value that enhances stability in key regions and promotes U.S. homeland security.

It is essential to recognize that JOCs are usually implemented simultaneously, whether in multiple regions, in a single JOA, or both. Army and joint forces must master the transitions between and among JOCs and have the ability to execute multiple, simultaneous JOCs across multiple regions. This recognition implies a capacity to conduct operations globally, in conjunction with one another, and to rapidly and effectively transition between them (Figure 3-1).

Major Combat Operations are conducted as part of joint campaigns to protect and defend the United States' vital national interests. In the aggregate, MCO includes all actions associated with immediate preconflict shaping, force projection, campaign execution and conflict termination, including transitions to and from stability operations. Conducting MCO is arguably the most challenging of military operations and within the range of military operations that present the greatest danger and risk to the Joint Force. The ability to successfully prosecute MCO underscores the credibility of the Joint Force across the full spectrum of operations, fundamentally influencing the success of other operations including SD, HLS and SO. It follows that MCO is the primary driver for identifying and developing Joint and Army transformational capabilities. Capabilities required to successfully execute MCO are generally applicable to other JOCs; however, differing environments, conditions and objectives inher-

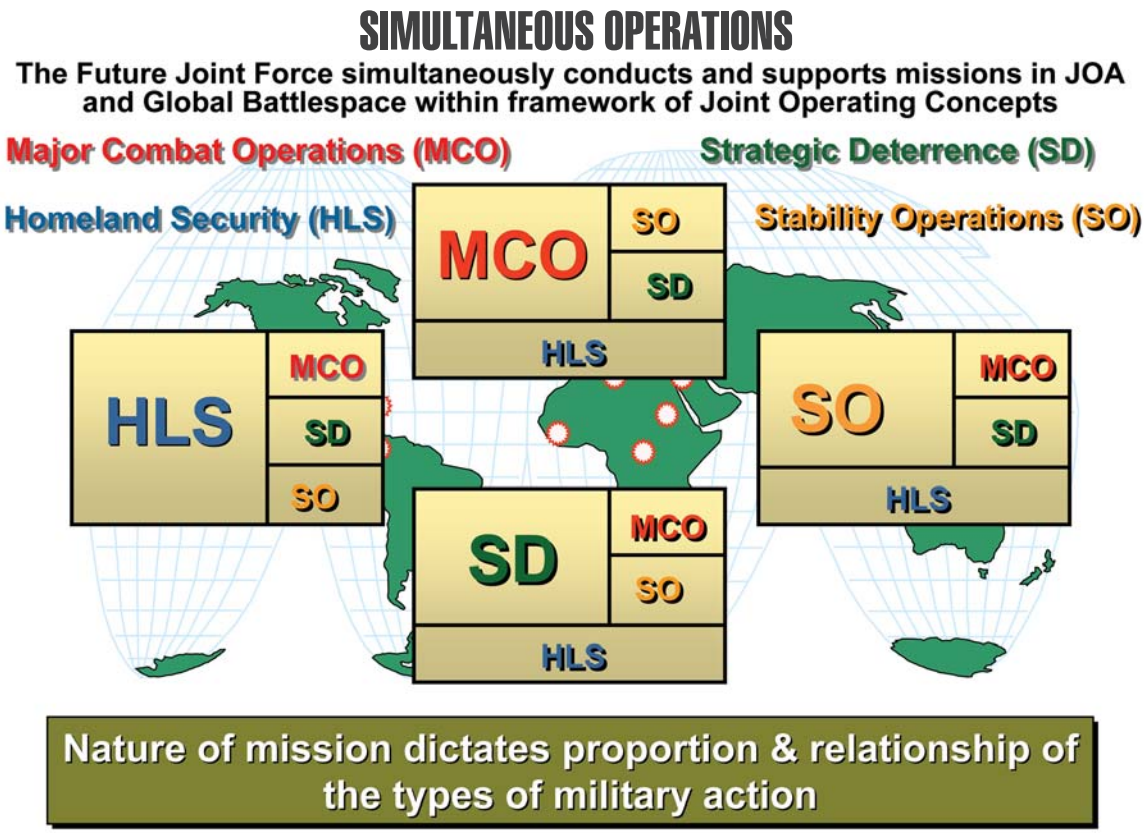


Figure 3-1. JOC Relationships to Simultaneous Operations

ent in other JOCs may require applying these capabilities in different ways and may require unique or additional capabilities.

JOC DESCRIPTION (Version 0.25, dated 12 September 2003)

The MCO JOC describes how joint forces will execute MCO in the next decade, and provides the operational context for the transformation of U.S. Armed Forces by linking strategic guidance to the integrated application of joint force capabilities. The MCO JOC describes an approach to warfighting and conflict resolution that exploits the capabilities of all U.S. instruments of national power to achieve full-spectrum dominance over an organized and capable adversary. The MCO referred to in this JOC are large-scale conflicts against an organized adversary, that possesses significant military capability and the will to employ that capability in direct opposition to, or in a manner threatening to, U.S. national security. The concept proposes a synergistic blending of other national capabilities—diplomatic, informational, and economic—with a credible, joint military force in order to create a situation with which the adversary can neither cope nor effectively respond.

The central objective of U.S. joint forces in the MCO JOC is to achieve victory in battles, campaigns, and wars through the fluid and coherent application of joint capabilities within an inherently joint, interagency and multinational environment. The JFC employs an effects-based approach and leverages a knowledge-enhanced force that operates with unity of purpose and action to achieve strategic and operational objectives. As friendly forces are brought to bear with unpredictability, speed, relentlessness, and seeming omnipresence—combined to maximize shock—they exert continuous pressure on the adversary and make the battlespace as a whole increasingly hostile, rendering continuing resistance impossible or futile.

Conceptual underpinnings of the MCO JOC include fluidity, coherence and unity of purpose. Fluidity, in this context, refers to the ability to readily adapt plans, shift forces, and redirect operations; the ability to seek out, create, and exploit opportunities and adversary vulnerabilities; and the ability to engage, or appear to engage, an adversary in every dimension, relentlessly applying pressure, irrespective of efforts to disengage or to seek advantage. It is analogous to the tendency of fluid to adapt to the shape of any vessel that contains it; to pour through any crack, hole, or gap; and to engulf any object that is immersed in it.

Conceptual Underpinnings of the MCO JOC

- Fluidity
- Coherence
- Unity of Purpose

Coherence, in this context, refers to ensuring that all available elements of the joint force are operating "in phase" that is, in a synchronized manner, with complementary purposes causing each element of the force to magnify the utility of the others synergistically, resulting in increased combat power.

Unity of purpose, in this context, refers to how the Joint Force executes the effects-based approach articulated in the MCO JOC, which links purpose to effects to tasks in order to facilitate the unity of action necessary to achieve desired outcomes at every level. Unity of action requires a clear and common understanding of purpose and of strategic and operational aims, as well as an understanding of the effects and tasks that will likely lead to attaining those aims.

The MCO JOC is predicated upon a globally integrated network of U.S. military forces, all relevant agencies, and coalition partners that facilitates collaboration and shared understanding to achieve unity of action.

Future friendly forces will be knowledge-enhanced, organized and designed to operate within a networked and collaborative environment to win the fight in the cognitive and information domains by achieving decision superiority. Decision superiority will be the result of consistently making better decisions more quickly than the adversary. An improved U.S. ability to sense, understand, decide, act, and adapt more soundly and more quickly than increasingly capable and creative adversaries is fundamental to the success of future combat operations.

JOINT CAPABILITIES

The MCO JOC describes MCO as conducted in campaigns comprised of sequential, parallel and simultaneous battles and engagements that are distributed throughout the battlespace. These distributed operations are conducted routinely in a noncontiguous, nonlinear battlespace. Operations will attempt to sustain an overwhelming operational tempo and to synchronize military actions with actions undertaken with other elements of national power. The Future Joint Force must have adaptive capacity and operational durability for sustained combat to defeat complex and adaptive adversaries. The current version (0.25) of the JOC identifies an initial set of desired capabilities for future MCOs that includes:

- Distributing the right power, in the right manner, at the right place and time throughout the entire battlespace
- Combining rapid, intensive, relentless maneuver and high volume strikes—kinetic and nonkinetic, lethal and nonlethal—with unprecedented speed to generate complementary and reinforcing effects
- Gaining and maintaining access to the battlespace by rapidly defeating an adversary's anti-access/area-denial efforts
- Radically reforming the joint deployment, employment, and sustainment continuum and mindset by further improving force projection and sustainment capabilities to create new force application and force protection options

- Comprehensively implementing an effects-based approach to the orchestration of all available resources to achieve the purpose of a particular operation and the decisive outcome for the MCO
- Leveraging comprehensive networked connectivity to achieve coherent action by the Joint Force
- An ability to constantly task organize the Joint Force to bring capabilities together in time and space to plan, rehearse, execute, and sustain decisive operations

In future joint campaigns involving MCOs, the JFC will seek to defeat the enemy and achieve decisive results as rapidly as possible. Joint operations will emphasize rapid strategic response by all Joint Force elements, leading immediately to the conduct of synchronized shaping and decisive operations throughout the depth and breadth of the JOA. The JFC views the conflict across time and space, through an end-to-end campaign analysis. The JFC must establish early and sustained control of the air, land, sea, space, and information domains, and focus on those key elements of the enemy systemology—critical capabilities, decisive points and centers of gravity—against which to apply decisive combat power. Overall, the JFC will seek to:

- Enter the conflict on his terms and immediately seize the initiative
- Build momentum rapidly through the most effective flow of forces that enables the integration of joint fires, interdiction, strike, maneuver, and information operations in all dimensions to shape the battlespace and set conditions for decisive operations
- Achieve decision early through rapid and sustained operations that overwhelm and destroy enemy forces, constrain his ability to respond, collapse his defensive integrity, and compel his defeat
- Possess campaign-capable qualities to ensure victory in extended conflict, when early decision is not achievable

Knowledge and situational understanding are essential for this type of joint campaign planning and execution. Knowledge building must begin with preconflict shaping and continue throughout the campaign to provide a comprehensive base of situational understanding for effective joint force employment. The joint force must have fully synchronized operational and sustainment battle rhythms based in part on an integrated common operational picture (COP), the ability to achieve and sustain increased force throughput via multiple, parallel force flows, and battle command for rapid and sustained operations, integrated from strategic to tactical levels.

Force Application

To immediately begin to neutralize the enemy's initial advantages of time and space, the JFC will require improved strategic responsiveness that embodies a deploy-equals-employ paradigm where future joint forces are expeditionary in character, arrive ready to fight, exploit en route knowledge building and continuous communications from home station through deployment, and close the gaps between early-entry and follow-on forces. Combinations of strategic and intra-theater lift must compensate for physical constraints such as austere environments and limited improved ports of debarkation (PODs), and they must simultaneously meet requirements for strategic power projection, operational employment, and continuous sustainment throughout the JOA to ensure operational agility. The JFC's intent will require multiple, simultaneous force flows across multiple entry points, including extending projection of combat-configured forces and sustainment into forward operating areas, to increase the throughput of combat configured forces and generate the desired combinations of strategic speed and power, thereby reducing predictability and enhancing operational surprise. Achieving the necessary increases in joint force throughput and strategic responsiveness will require improvements in lift capabilities, force design and structure (including a rebalanced force structure

that meets JFC force requirements and unit and mission configured loads), and the deployment process itself.

Exploiting advantages in strategic responsiveness, the JFC will conduct shaping actions to alter or set the conditions for campaign execution. These actions will include multiple flexible deterrent options that can be employed for preclusion, preemption and in conflict; early entry of conventional and unconventional forces for force protection, intelligence collection and situational awareness, security and battlefield preparation; early destruction of Integrated Air Defense Systems (IADS) and domination of air and sea approaches; establishment of a joint theater air and missile defense (JTAMD) umbrella capable of protecting continuous force projection, key assets within the JOA and cooperating regional partners; and assuring responsive communications and ISR networks (including space-based assets). Shaping actions must also include immediate initiation of information operations, closely integrated with diplomatic, political, economic, and overt military actions that deny an adversary a cognitive view of the battlespace, influence his decision making, and convince him that defeat is inevitable. Forcible entry of dismounted and mounted forces by air and sea, and immediate, sustained attacks against key enemy capabilities allow the JFC to rapidly seize the initiative, constrain the enemy's freedom of action, extend U.S. operational influence, and begin the process of paralysis and disintegration.

Shaping actions rapidly transition to decisive operations, which accelerate MCO termination by compelling the enemy to cease to resist, or destroy the enemy's capabilities to the extent he is no longer physically able to resist. Decisive operations are achieved by rapid, integrated and near-simultaneous application of joint forces throughout the JOA. Destruction, dislocation, and disintegration of the enemy's military integrity and cohesion and more rapid conclusion to tactical engagements, permits a high operational tempo and reduces a need for sustainment pauses. They are envisioned as continuous operations in all conditions and environments, with the ability to respond to opportunities, exposing the entire enemy force to direct action and providing no respite or opportunity to effectively regroup or reconstitute. Decisive operations require higher levels of joint force operational agility to act throughout the battlespace against those objectives and capabilities, including time-sensitive targets, most vital to the enemy's operational integrity—with particular emphasis on exploitation of the vertical dimension at tactical and operational depths with mounted forces, manned and unmanned sensors and networked joint fires. Key to decisive operations will be sharply improved joint suppression of enemy air defenses (J-SEAD) to enable and protect vertical exploitation, and fully integrated joint fires/effects from operational through tactical levels that provide redundancy, reduced latency, expanded engagement options, and effective combat assessment.

Battle Command

The current joint construct describes Joint Command and Control and BA as functional capabilities required by the Joint Force to execute future joint operations. The Army views battle command, which includes both C2 and BA, as the essential operational capability that enables the conduct of future joint operations and campaigns.

The transformational essence of battle command is the movement from estimate-based to knowledge-based planning and execution. As described in Chapter 2, battle command is the art and science of applying leadership and decision making to achieve mission success. Battle command requires not only the technical capabilities to collect, analyze, use and distribute accurate information and intelligence in a timely relevant manner, but also the decision aids and leader training and skills that translate information superiority into decision superiority and

effective, timely actions at tactical through operational levels.

At the macro level, joint battle command begins with the theater campaign construct. The combatant commander will continue to focus on providing strategic direction and resources to JTFs. Regional combatant commanders will remain responsible for establishing the overall theater structure to support JTF operations and, from that perspective, will direct strategic deployment, theater to national lines of communications, as well as theater sustainment, ISR, and air and missile defenses. Joint Task Forces will remain the organizational construct for conducting operations within a specified JOA. Several new concepts to improve the ease and responsiveness of JTF formation are being explored, most notably the SJFHQ and Service concepts for employing component headquarters as JTF HQs.

The conduct of simultaneous, high-tempo, noncontiguous operations distributed broadly throughout the JOA will place heavy demands on joint force leadership and C2. Commanding, controlling, and leading future joint forces will require more capable commanders, staffs, and support elements that fully understand the complexities of the emerging operating environment as well as the highly-integrated joint, multinational, and interagency characteristics of future operations. Critical to this revolutionary planning and execution paradigm change will be the creation of a network collaborative information environment (NCIE) that enables simultaneous, collaborative and iterative planning by multiple echelons within the Joint Force.

Information superiority (IS) is essential to exercising battle command required to execute the MCO concept of simultaneous, distributed operations described above and is achieved through a combination of technical and intellectual means. The struggle to maintain IS against a capable, adaptive adversary will be challenging and continuous. A constant advantage cannot be assumed. Advanced C2, communications, and ISR capabilities will form the backbone of battle command for the Joint Force. In particular, the Joint Force will rely on knowledge-based networks, vertically and horizontally integrated from strategic to tactical levels. Drawing information, updated in near real time, from a wide variety of automated and manual sources—onboard sensors, unmanned air and ground vehicles, traditional and new ISR means, space platforms, and an assortment of correlated databases—this knowledge network will focus on improving and accelerating the decision-action cycle and enhancing effective force employment. The network will provide the means for forces at all levels to achieve situational understanding (SU) and establish, maintain, and distribute a common (joint) operating picture tailored to force and situation. Concurrently, the command and control, communications and ISR networks will sharply enhance the lethality, survivability, agility, and versatility of the force, enabling more effective and timely application of joint force elements.

Information assurance is a key aspect of battle command. Joint command and control, communications and ISR systems and architectures must account for a wide array of threats through a combination of redundant and multi-layered systems that do not present a single point of failure within the space-to-mud, horizontally and vertically integrated network. Self-healing qualities that automatically adjust the network, reroute information flows, and identify/execute immediate action measures to counter an enemy's actions, and embedded defenses against computer-network attack, deception, electronic intrusion or monitoring, and electro-magnetic pulses are required.

Space support will extend from national to tactical levels, and the Joint Force will routinely exploit the overhead constellation of military and civilian space platforms for intelligence, focused surveillance, area reconnaissance, long haul communications, early warning, positioning, timing, navigation, missile defense, weather/terrain/en-

vironmental monitoring, and access to the GIG. The layered redundancy and improved capabilities provided through space will sharply improve development of SU at all levels and will prove particularly indispensable in immature theaters where existing communications infrastructure (e.g., absence of fiber optic cable networks) may be insufficient or unreliable.

A significant challenge to achieving the high levels of battlespace awareness required for future joint operations requires solving the multi-level security issues inherent in networking ISR and communications capabilities from strategic through tactical levels, including interagency and multinational partners.

Protection

Adversaries employing anti-access and area-denial strategies will present particularly complex threats to force protection, including tactical/theater ballistic missiles (TBMs), countermines (CM), sea mines, chemical, biological, radiological, nuclear, high yield explosives (CBRNE), and special operations forces (SOF). Many of these strategies will require theater-level constructs for force protection, such as JTAMD, early warning, and protection plans that extend beyond U.S. forces to include protection of multinational partners, interagency participants, civilian contractors, and local populations. Threats of weapons of mass effects (WME) use, or intentional acts to contaminate the environment and destroy critical infrastructure, present demands for unique and innovative operational, organizational, and technological capabilities to prevent and respond accordingly. Examples include expanded and enhanced human intelligence (HUMINT) capabilities; more rapidly deployable, sustainable and lethal missile defense capabilities; enhanced multispectral disease prophylaxis; and sharply increased capabilities to protect critical communications and ISR nodes and systems. Given this complex threat environment, the advantage provided through superior knowledge concerning force protection threats and vulnerabilities cannot be overemphasized. Similar to information superiority, maintaining required levels of force protection will be a continuous challenge against an adaptive, capable adversary.

Formations within a joint force must possess robust, inherent force protection and survivability capabilities fully integrated across the force to provide effective, multi-layered sets of active and passive capabilities. Examples include organic capabilities for identification, friend or foe (IFF), air and missile defense, early warning, cueing, surprise avoidance, active and passive protection systems; robotic systems to reduce exposure of manned elements; and decentralized, distributed operations by highly mobile maneuver elements that provide inherent force protection against enemy acquisition and engagement.

Significant force protection challenges include information assurance to protect joint networks; security and protection of discontinuous lines of communications that will often characterize distributed operations within a non-contiguous battlespace; improved capabilities for mine detection, identification, countermine, and stand-off neutralization to counter the prolific use of mines; identification, defense and protection against CBRNE threats; defense and protection against the multidimensional threats to vertical maneuver, during both flight and loading/off-loading phases; and fratricide prevention across the entire force, including interagency and multinational partners. Assuring force protection in the face of these challenges will require new technologies, as well as focused, limited-scope operations to set and maintain appropriate force protection conditions.

Focused Logistics

Sustainment operations in the Future Force must artfully blend strategic and operational sustainment and extend strategic sustainment flows beyond the shoreline to provide continuous sustainment throughout the JOA in order to enable

campaign execution without the necessity of extensive force buildup or operational pauses. Transformation to the network-centric warfare model of the information age requires a sustainment capability that shares the same attributes as combat units. This sustainment capability must be characterized by speed, adaptability, flexibility, shared situational awareness and understanding, a logistics COP, a robust communications infostructure, all of which provide for a distributed, adaptive system for rapid replanning, execution, and sustainment of military operations in complex, uncertain environments. The overarching goal is the continuous, precise, assured provisioning of deployed forces in any environment, ensuring the ability to generate, maintain, and employ combined arms combat power at every point in the joint campaign. Sustainment flows must be fully integrated within a national-to-theater-to-tactical continuum, from early entry through conflict termination, in order to support the deployment momentum needed to seize the initiative early, build and maintain operational momentum, and overwhelm the adversary. Focused logistics requires a global view that fully exploits and integrates DOD, joint, and Service assets and resources, external and internal to the JOA and theater.

Within this global framework, theater sustainment operations for MCO rest solidly on the fundamental concept of distribution-based logistics (DBL). The key principles underlying DBL include velocity over mass; centralized management with decentralized execution, multinodal/multimodal execution; maximum throughput; minimum essential stockpiling; seamless two-way flow of resources; in-transit visibility of stocks and supplies; unit- and mission-configured loads; real-time combat service support (CSS) situational understanding that enables anticipatory logistics; and time-definite delivery. Velocity over mass is the key element, one that substitutes the pipeline (inventories in motion) for large inventories stockpiled in-theater. Implementation of these principles enables the Future Force to employ split basing, optimize reachback operations, enhance force protection, and reduce logistical footprint in theater.

As with the operational paradigm described in the MCO concept, the sustainment time and distance paradigm will also change significantly in response to a number of operational factors, including force dispersion, operational tempo, noncontiguous operations, and expanding operational radii. Sustainment forces within the joint force must share the same quality of situational understanding as that provided to operational forces, ensuring that the logistical COP is fully harmonized and supportive of commander priorities. Theater sustaining operations will often be characterized by discontinuous, temporarily established lines of communication. Aerial sustainment will be required in a greater degree to support the air-ground mobility and agility needed to meet joint force requirements. More than ever before, operational and sustainment planning must be closely integrated, with battle and logistics rhythms inextricably linked. Tailorable joint theater logistic commands will provide an operational solution to these challenges. Combatant commanders retain the authority to direct Service component support responsibility to other Services in their AORs. This remains a viable means of increasing joint force efficiency and improving force effectiveness.

Experience indicates that the cumulative result of numerous major and minor initiatives will be required to have significant payoff in reducing strains on logistics systems. Among those initiatives are weight and cube reduction across all classes of supply (with respect to the Joint Force systems and platforms), simplified (common) packaging and materiel handling (with reduced requirements for internodal or intermodal repackaging or handling), increasing levels of commonality and interoperability, and more effective and efficient reliance on other-than-military support.

ARMY CAPABILITIES

The capabilities of Army forces to dominate the land domain in any MCO underscore its credibility and effectiveness for full-spectrum operations. The land domain military challenge inherent in the MCO JOC flows from the premise that ultimately, to achieve the effects required for military victory and set the conditions for achieving strategic and political objectives, the Joint Force must establish and sustain control of land, people and resources within the JOA. Long-range air and missile strikes may achieve significant effects and set conditions in the early stages of a campaign, but they cannot provide the sustained, dominant control required for decisive outcomes and conflict termination. While dominance in the air, sea and space domains within a JOA are generally achievable early in a campaign, establishing dominance in the land domain usually involves overcoming the tyranny of time and distance to project and sustain the requisite land power forces and capabilities, often to regions where U.S. forces lack significant presence or supporting infrastructure. The ability to achieve and sustain land dominance within a JOA is a unique capability that preempts enemy freedom of action and isolates adversary forces, denying the enemy sanctuary regardless of terrain and environmental conditions. Closely associated is the reality that the Army provides most of the security and sustainment capabilities for the Joint Force. Based on an assessment of the emerging MCO JOC, the following Army capabilities are required or implied for successful MCO execution.

Force Application

- Modular, combined arms combat forces rapidly deployable, in a ready-to-fight configuration, into a JOA or multiple JOAs at the times and locations required by the combatant commander and consistent with time frames specified in the Defense Strategy
- Increased Special Operations Forces and capabilities, including covert insertion, unconventional operations, psychological operations (PSYOPs), civil affairs, special reconnaissance and direct action, to conduct battlespace preparation in the manner and time frames required by the combatant commander
- Rebalanced forces, incorporating Force Stabilization and Unit Manning System and unit rotation constructs, to meet JFC requirements for more modular, readily accessible, full-spectrum, ready land forces for early-entry, forcible-entry and sustained operations
- Modular forces tailored for self-sufficiency and endurance and designed as part of a joint team, with the mobility to conduct mounted and dismounted maneuver in all conditions (all weather, all terrain, all environments) throughout the breadth and depth of the JOA, including tactical and operational vertical envelopment
- Forcible entry of mounted forces, employable across the range of environmental and terrain conditions, for rapid seizure of the initiative, with superior organic mobility to move rapidly beyond the initial lodgment, achieving operational effects from tactical action
- Sharply increased deployment and support infrastructure that compensates for physical constraints, such as austere environments and limited improved PODs, that reduce response times for early-entry forces and close gaps between early-entry and follow-on forces:
  - Reset and evolve Army pre-positioned stocks (APS) and establish the Army Regional Flotilla (ARF) to provide forward positioned unit- and mission-configured sets of critical capabilities that significantly reduce response timelines for early-entry forces
  - Develop expeditionary-basing capabilities that are fully integrated with joint sea-basing capabilities
- Enhanced offensive information operations capabilities to include electronic warfare,

computer network attack, military deception and space control

- As part of networked joint fires linking sensors to shooters, line-of-sight (LOS) and non-line-of-sight (NLOS), kinetic and nonkinetic lethality capabilities that deliver precise and desired effects at the ranges required for decisive operations by rapid, integrated and near-simultaneous application of joint forces throughout the JOA

Battle Command

- Battle command on-the-move capabilities that support and enable rapid, integrated and near-simultaneous operations throughout the JOA, including the land force component of the COP, real-time blue and gray force (commercial, civilian, noncombatant, etc.) tracking, en route/on-the-move mission planning and rehearsal capabilities, and long-range communications
- Knowledge-based collaborative planning and decision support tools integrated with joint planning systems/processes, including near-term good-enough capabilities and, for the longer-term, development of a single, joint interoperable battle command system of systems
- Army force HQ designed to operate as a JFLCC HQ, and when augmented with the appropriate SJFHQ and Joint Interagency Coordination Group (JIACG) elements, function as a JTF HQ
- Home Station Operations Centers to support rapid force projection and provide reachback, planning and analysis capabilities, while reducing footprint in the JOA
- Advanced sensors employed in enhanced netted sensor grids consisting of the right mix of multi-intelligence collection from space, air, surface, subsurface, and cyber to provide commanders persistent coverage of areas beyond the reach of organic sensors
- Greatly improved tasking, processing, posting, and using (TPPU) fusion across all domains ensuring information availability as soon as possible, providing the land aspect to the COP, and supporting knowledge-based collaborative planning and decentralized distributed (through time, space and purpose), noncontiguous operations through tactical levels
- Communications networks that provide long-range, continuous-connectivity, all-weather, all-terrain, self-regulating, and self-healing communications through operational and tactical levels
- Multilevel security procedures to enable shared information and battlespace understanding

Protection

- Enhanced Soldier protection that combines active and passive individual protection capabilities and networks the Soldier with his teammates and the combat formation for greatly improved situational understanding
- Enhanced platform protection that combines both active and passive measures and enhanced situational understanding through networks linking manned and unmanned platforms within the formation and within the joint team
- As part of fully integrated JTAMD capabilities, enhanced ground-based air and missile defense capabilities, including assured, accurate, real-time missile warning and distribution capabilities direct to affected forces and BCSs, with the mobility to support nonlinear, distributed, simultaneous operations throughout the JOA
- Enhanced defensive information operations capabilities to protect the force, information and information systems, to include OPSEC, computer network defense and space control

- Advanced CBRNE detection, protection and mitigation capabilities that are readily accessible to JFCs
- Enhanced intelligence coordination and exchange operations to better characterize and predict potential threat activities and actions
- Enhanced medical surveillance, including medical ISR, disease diagnosis, outbreak response, protection, mitigation, and recovery capabilities that interfaces with the medical C2 system as well as tactical C2 systems to allow such capabilities as real-time physiological status monitoring

Focused Logistics

- Networked logistics information systems, enabled by agile, assured communications, that allow logisticians to see requirements in near real time, and provide the decision support tools necessary for sense and respond logistics
- Increased theater support for the Joint Force to enable synchronized shaping and decisive operations throughout the depth and breadth of the JOA
- Modular, rebalanced forces for rapid and sustained logistics support, reducing footprint in the JOA through reachback
- Modular configuration of sustainment to facilitate efficient, flexible throughput to using units
- Tailorable and expandable force reception that supports continuous sustainment throughout the JOA to ensure operational agility, even in austere environments with limited improved PODs
- Integrated and responsive distribution enabled by in-transit and total asset visibility
- Infrastructure that can be rapidly configured to meet operational requirements
- Reduced sustainment demand through technology exploitation, new maintenance concepts based on improved reliability, diagnostics, and prognostics

JOINT INTERDEPENDENCIES

The synchronized employment of land, air, sea, space, and SOFs provides the joint commander with the widest range of strategic, operational, and tactical options. Although each Service contributes its own unique capabilities to the joint campaign, each dominating its respective domain, joint interdependence is critical to improved joint force effectiveness. Joint interdependence is achieved through the deliberate, mutual reliance of each Service on the capabilities of other Services or agencies to optimize the overall effectiveness of the joint force while minimizing its vulnerabilities. Only joint interdependencies that fully integrate dominant maneuver, precision engagement, focused logistics, and full-dimensional protection can enable the swift and decisive defeat of an enemy's forces throughout the JOA, resulting in rapid campaign conclusion. Several significant (but not all-inclusive) examples of interdependent capabilities required to dominate the enemy follow:

- Joint-integrated C4 and ISR capabilities and networks to gain information superiority, share a COP, determine the enemy's systemology, enhance joint-integrated information operations, and improve the ability of joint force and component commanders to synchronize operations based on better, more timely decisions at a pace that the enemy cannot match
  - Assured, networked joint and national ISR systems accessible by commanders at strategic through tactical levels that support mounted and dismounted maneuver, including force health protection, in all conditions throughout the breadth and depth of the JOA
  - Offensive information operations capabilities to deny an enemy's use of military, commercial, and civil space-based ISR as-

sets, and to degrade or deny enemy access to C2/decision support systems

  - Commonality of doctrine, terms, graphics, tactics, techniques, and procedures (TTPs), and visual tools and displays

- Strategic and operational air and sea lift to facilitate strategic responsiveness and operational agility. The most significant new capabilities required to improve Joint Force and Future Force strategic responsiveness and operational agility include shallow-draft, high-speed ships (SDHSS), super-short take-off and landing (SSTOL) aircraft, and advanced, heavy-lift vertical take-off and landing (HLVTOL) aircraft
- Networked joint fires that support mounted and dismounted maneuver in all conditions throughout the breadth and depth of the JOA
- Joint-integrated fire control system of systems for more effective and timely application of all-source fires and effects
- A comprehensive joint force protection umbrella that includes air and missile defense, provides security of air and sea ports of debarkation, and enables uninterrupted force flow against a diverse variety of anti-access threats
- Joint-integrated logistics, including supply, distribution and force health protection systems and processes that are responsive to combatant commander needs, eliminate unnecessary redundancies, increase efficiencies, and minimize the logistical footprint in theater

STABILITY OPERATIONS JOINT OPERATING CONCEPT (SO JOC) 4

Stability Operations (SO) are military operations conducted in concert with the other elements of national power and multinational partners, to maintain or reestablish order and promote stability. Stability Operations include military operations that establish, shape, maintain and refine relations with other nations, and operations to ensure the safety of American citizens and U.S. interests, while maintaining and improving the U.S. ability to operate with multinational partners to deter hostile ambitions of potential aggressors. Stability Operations serve to demonstrate U.S. commitment, reassure allies, friends and coalition partners, promote transparency, convey democratic ideals, deter aggression, and help relieve sources of instability before they can become military crises.

JOC DESCRIPTION (Version 0.2, dated 5 September 2003)

The SO JOC serves as an articulation of how a future JFC will plan, prepare, deploy, employ and sustain a joint force against potential adversaries' capabilities or crisis situations specified within the range of military operations in a 2015 timeframe. The SO JOC describes how SO will be conducted under four conditions: prior to initiation of combat operations-to prevent conflict; during combat operations—to mitigate the effects of conflict; as a result of combat operations—to consolidate gains and rebuild damaged societies; and as a stand-alone operation. While recognizing the broad spectrum of military operations associated with SO, the SO JOC focus is on stabilization and reconstruction efforts conducted prior to, in conjunction with, or immediately after MCO, or as a stand-alone operation in permissive, uncertain, and hostile environments.

The SO JOC envisions an inextricable link to interagency and multinational efforts. Operations are characterized as rapidly responsive, proactively and continuously shaping the regional battlespace in every dimension in such a way that resistance is impractical and assistance is welcome. Stability Operations are envisioned to use cooperative pressure focused on achieving U.S. and coalition strategic goals, and military operations are undertaken in concert with the other elements of national power and multinational partners to that end.

The main objectives pursued by U.S. and multinational military and civilian elements in SO are restoring or establishing order, providing humanitarian assistance, establishing new governance, restoring essential services, and assisting in economic reconstruction. All of this activity is undertaken expeditiously in order to pave the way for a transition to continuing governance and reconstruction led by legitimately elected, indigenous civilian authorities. The SO JOC covers a number of mission types, including, but not limited to, peace enforcement, peacekeeping, counterinsurgency, and foreign internal defense operations. The JOC highlights three types of capabilities—coercion, socialization, and inducement which are likely to be employed to deal with so-called spoilers, indigenous elements that would seek to oppose and undermine U.S. stability operations. For each mission type, and in different SO contexts, the mix of coercion, socialization, and inducement employed will change over time as conditions change and the necessary progress required to establish and maintain a safe and secure environment and transition to indigenous civilian control is achieved.

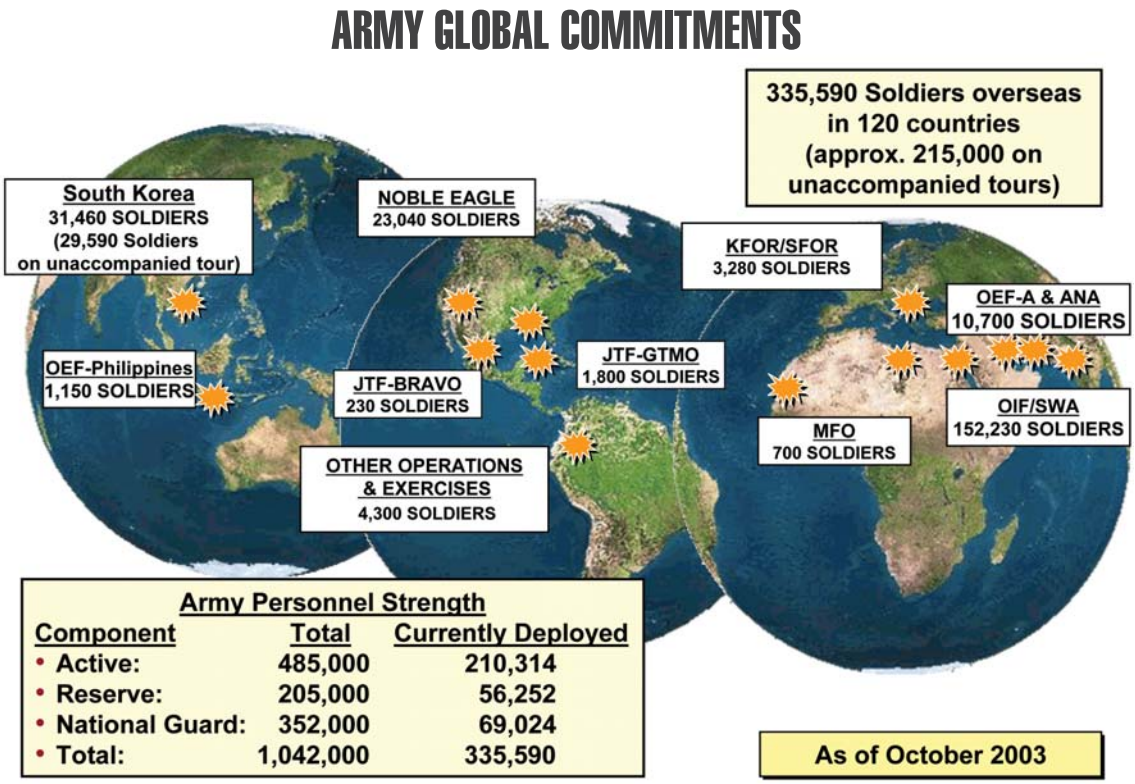


Figure 4-1. Army Global Commitments

Stability Operations are conducted within the framework of the existing collaborative information environment, using an effects-based approach, by forces that have enhanced joint knowledge and a wide range of both combat and noncombat skills. This effects-based approach envisions the ability to convert the purpose of mission (commander's intent) toward a desired end state in coordination with conjunctive missions (major combat operations, other contingency operations, etc.). Integration of stability planning with contingency operations will be a critical element for achieving the desired end state and can no longer be an afterthought. The SO JOC holds adaptability as the key to successfully navigating these challenges.

JOINT CAPABILITIES

Joint forces will conduct SO within the context of MCO, or as a separate contingency operation. The operational environment, while similar in many respects to that for MCO, will almost certainly involve operations in urban areas and will likely include irregular and paramilitary forces in semi-permissive or nonpermissive environments. Stability Operations require early continuous and comprehensive planning and coordination among joint, interagency, and multinational elements to establish early and sustained control of the informational, land, air, sea, and space domains, and to identify the key elements or tasks—critical or decisive points and centers of gravity—against which to apply joint capabilities to seize the initiative and rapidly achieve strategic and operational objectives. As with MCO, the JFC will seek to seize the initiative, establish momentum and achieve strategic and operational objectives as rapidly as possible.

To build and sustain operational momentum, and particularly when conducted as a separate contingency operation, SO will emphasize rapid

commitment of joint force elements, with immediate employment capability throughout the depth and breadth of the JOA. While many of the joint force capabilities required for MCO are equally applicable to SO, stability operations are inherently manpower intensive and place a high demand on military capabilities required to establish the safe and secure conditions necessary for all elements of the joint, interagency and multinational team's freedom of action to collectively achieve success. Figure 4-1 highlights the manpower intensive nature of current full-spectrum operations, particularly postconflict stability operations in OIF.

Stability Operations will continue to present significant challenges to the Joint Force, requiring sustained readiness for combat tasks while simultaneously executing the wide array of non-combat tasks typical to operations other than war. Stability operations place a premium on adaptive leaders and multifunctional units and Soldiers. Stability operations, particularly long-term operations, will include participation by multiple multinational partners, as well as a variety of governmental and nongovernmental agencies, that will present varied and unique interoperability challenges for the joint force at strategic through tactical levels. The mix of military force capabilities, both joint and multinational, will be driven more by the essential requirement to exert and sustain positive control than by high-tech capability requirements.

As with MCO, knowledge and situational understanding are essential for success; however, situational understanding in SO is more broadly focused to include culture, civilian and commercial industry and infrastructure, civil public health and medical infrastructure, power and transportation networks and grids, broadcast and print media (official and unofficial) networks, facilities and outlets, etc. The C2, communications and ISR challenges of SO may be more complex than those encountered in MCO, requiring unique mixes of sensor and communications suites, HUMINT, CI, and special attention to information fusion and enablers for urban environments, as well as solving multilevel security challenges.

Force Application

To have the desired immediate impact in SO, the JFC requires improved strategic responsiveness that embodies a deploy-equals-employ paradigm where future joint forces are expeditionary in character, arrive ready to operate, exploit en route knowledge building and continuous communications from home station through deployment, and close the gaps between early-entry and follow-on forces, including the capability to covertly insert forces. Combinations of strategic and intra-theater lift must compensate for physical constraints such as austere environment and limited improved PODs, and simultaneously meet requirements for strategic power projection, operational employment, and continuous sustainment throughout the JOA to ensure operational momentum and agility. Building on combatant commander security cooperation and regional engagement activities, the JFC will execute shaping activities to assure unhindered physical access at times and places necessary to employ and sustain military forces and other elements involved in the stability operations. The joint force will require the capabilities to execute the range of stability operations tasks, including a broad range of military nation-building skills, operational and tactical level nonlethal and limited-collateral damage weapons, conventional forces with SOF-like capabilities in language, weapons, automation, communications, training, and equipment, and flexible and adaptable forces and leaders that can operate in all environments, capable of rapid transition from MCO to stability operations and back. The JFC will require a sustained force presence that can establish and sustain a secure environment in which diplomatic and economic programs can succeed, which will require persistent availability of appropriate forces for stability operations augmentation and reinforcement.

Battle Command

Battle command capabilities required for MCO are applicable to SO and, as with MCO, battle command is the transformational underpinning for success in future stability operations. Battle command must include a comprehensive operational net assessment (ONA) capability that encompasses diplomatic, information, military and economic (DIME) assessments—including infrastructure and utilities—enabling rapid, continuous, knowledge-based planning for stability operations. Joint command and control networked with interagency, multinational and out-of-theater non-DOD facilities is also required, along with collaborative planning and a COP to include interagency and multinational linkages, C2 with reachback and plugs to accept other agency and multinational participation, a secure and robust communications pipeline—including secure connectivity to the GIG—and rapid information sharing with coalition members, interagency players, and nongovernmental organizations. There must be expanded JIACG capabilities resident in Joint Force HQ with full-time, collaborative, simultaneous planning and rehearsal among joint, interagency and multinational elements involved in SO. Broad intelligence gathering and dissemination capabilities-including long-distance collaborative planning involving appropriate United States Government (USG) interagency and foreign government linkages-are also required. Cultural intelligence, including language and cultural understanding, expanded HUMINT, and HUMINT support technologies, must also be present.

Protection

The majority of joint force protection capabilities required for MCO are equally applicable to stability operations. Planning and execution for force protection must include not only joint forces, but also government and nongovernment agencies and multinational partners involved in stability operations. Broad-based situational understanding and knowledge building throughout the domains in which joint, interagency, and multinational partners operate is essential to identifying force protection threats and vulnerabilities. The networking of joint, interagency, multinational and nongovernmental entities implied by the SO JOC greatly increases the complexity of assuring access to essential information and intelligence. Unique to stability operations, force protection must account for the threats presented by irregular and paramilitary forces operating inside and outside the JOA.

Focused Logistics

Focused logistics capabilities required for MCO are applicable to stability operations. Sustainment operations must artfully blend strategic and operational sustainment and extend strategic sustainment flows beyond the shoreline to provide continuous sustainment for a wide range of stability operations tasks throughout the JOA. The overarching goal is continuous, precise, assured provisioning of deployed forces and supporting agencies in any environment, ensuring the ability to generate and maintain operational momentum throughout the JOA. Logistical systems must be flexible and adaptable to support operational transitions from and to stability operations, while continuing to provide networked logistics information systems for accurate, total asset visibility within the COP. The JFC will require military transport and logistical infrastructure that is rapidly reconfigurable to support both combat and stability operations, agile military contracting capability to source specific and niche requirements, and supply and distribution systems and processes that meet joint, interagency, and multinational requirements.

ARMY CAPABILITIES

The land domain military challenge inherent in the SO JOC flows from the premise that to achieve the effects required for success in stability operations and set the conditions for

achieving strategic and political objectives, the joint force must establish and sustain control of land, people and resources within the JOA. The Army provides the large majority of the operational and sustainment capabilities for the joint force across the full scope of SO missions and tasks. Based on an assessment of the emerging SO JOC (Version 0.2, dated 5 September 2003), the Army capabilities required for MCO are generally applicable for successful SO execution. Highlighted in the following text are specific applications of these capabilities and additional capabilities required for SO.

Force Application

- Modular forces, tailored for self-sufficiency and endurance and designed as part of a joint team that support combatant commander security cooperation and regional engagement plans and activities
- Modular, tailorable, and multifunctional forces rapidly deployable into a JOA at the times and locations required by the combatant commander and designed as part of a joint team to achieve JFC operational objectives and set the conditions for achieving strategic objectives
- Integrated application of increased IO capabilities with other lethal and nonlethal capabilities
- Multifunctional units with enhanced security and patrolling capabilities in urban environments
- Increased Army SOF capabilities, including PSYOP, civil affairs, special reconnaissance, unconventional operations/warfare, direct action to conduct covert operations, battlespace preparation, and enhanced foreign internal defense (FID) in support of combatant commanders' Theater Security Cooperation Plans (TSCP)
- Increased counterterrorism (CT) capabilities to support and conduct CT activities within and outside the JOA
- Enhanced explosive ordnance disposal (EOD) capabilities that include remote capabilities employable in urban environments and provide increased protection for military and nonmilitary personnel, including noncombatants
- Modular and tailorable engineer assets including facilities repair and construction, power generation, road construction, and debris clean-up and removal
- Enhanced CM capabilities that include remote capabilities employable in urban environments and provide increased protection for military and nonmilitary personnel, including noncombatants

Battle Command

- Battle command on-the-move capabilities that support and enable rapid, integrated and near-simultaneous operations throughout the JOA, including the land force component of the COP, real-time blue and gray force tracking, en route, on-the-move mission planning and rehearsal capabilities, and long-range communications
- Army force headquarters designed to function as Joint Force Land Component Commander (JFLCC) HQ, and when augmented with SJFHQ and JIACG elements function as JTF HQ, interoperable with other agencies and multinational partners

Protection

- Increased protection and security capabilities for U.S. forces and assets, non-DOD U.S. personnel, nongovernmental organizations (NGOs), and key assets and infrastructure within the JOA
- Increased CI and HUMINT capabilities to conduct liaison with host nation intelligence and security organizations
- Comprehensive force health protection, including medical ISR, and diagnostic,

prevention and treatment capabilities for the joint force, providing a continuum of medical status and epidemiological information

- Comprehensive medical diagnostic, prevention and treatment capabilities for the joint force
- Limited medical support until indigenous or nongovernmental organization medical capabilities are established, within regulatory, statutory, and operational constraints

Focused Logistics

- Networked logistics information systems, enabled by agile, assured communications, that allow logisticians to see requirements in near real time and provide the decision support tools necessary for sense and respond logistics
- Theater support capabilities for the joint force, including support to other agencies and multinational and coalition partners
  - Infrastructure that can be rapidly configured to meet stability operations requirements
  - Strategically and operationally responsive forces for rapid and sustained logistics support
  - Integrated and responsive distribution enabled by in-transit and total asset visibility

JOINT INTERDEPENDENCIES

As with MCO, Joint interdependence is achieved through the deliberate, mutual reliance of each Service on the capabilities of other Services or agencies to optimize the overall effectiveness of the joint force while minimizing its vulnerabilities. Significant interdependent capabilities required for successful application of Army capabilities in stability operations include:

- Assured, networked joint and national ISR systems accessible by commanders at strategic through tactical levels that support stability operations in all conditions throughout the breadth and depth of the JOA
- Networked joint, interagency and multinational communications systems in all conditions throughout the breadth and depth of the JOA
- Trained and ready SJFHQ and JIACG elements available for rapid augmentation of Army force headquarters
- Collaborative planning processes and systems linking joint, interagency and multinational partners
- Multilevel security that will permit the exchange of information and intelligence across all friendly echelons and with allies and coalition partners
- Access to data resident in databases maintained within the JOA throughout the national intelligence community
- Networked joint supply and distribution systems and processes
- Commonality of doctrine, terms, graphics, TTPs, and visual tools and displays

STRATEGIC DETERRENCE JOINT OPERATING CONCEPT (SD JOC) 5

Strategic Deterrence (SD) is the prevention of aggression or coercion by adversaries that threaten vital interests of the United States. It encompasses the range of DOD capabilities that alter the adversary's will and ability to attack the United States, its allies, economic stability, or development of democracies throughout the world. Deterrence not only addresses the prevention of conflict, but also continues once conflict is joined to prevent its escalation or expansion through the employment of other capabilities, such as weapons of mass destruction (WMD), or the invasion of a neutral country. Due to the breadth of potential adversary actions, U.S. joint forces must be prepared to deter with a wide array of military capabilities, several of which are directly connected to other JOCs, which underwrite strategic deterrence. U.S. forces' capability to decisively defeat an adversary in an MCO provides a powerful deterrent to potential adversaries. Forward-stationed, forward-deployed and expeditionary forces around the world, and Theater Security Cooperation actions provide inherent deterrent value and assist in maintaining situational understanding. Similarly, active and passive homeland defense capabilities are major contributors to strategic deterrence with respect to attacks on the United States.

JOC DESCRIPTION (Version 0.2, dated 5 September 2003)

The SD JOC describes how a JFC will plan, prepare, deploy, employ, and sustain a joint force to achieve specific deterrence objectives established by the national leadership of the United States. The JOC stipulates that to achieve these objectives, joint force operations and activities must decisively influence the strategic deterrence center of gravity of potential adversaries—the decision-making processes of key adversary leaders. The JOC emphasizes that formulating an effective set of strategic deterrent joint operations and activities requires that the JFC undertake specific efforts to gain an understanding of the adversary's point of view, decision processes, and proclivities, including his risk-taking propensities.

The JOC focuses on three fundamental approaches to influencing an adversary's decision-making processes. Deterrence by benefit denial involves the use of joint forces to convince an adversary that the benefits sought are of little value or are unlikely to be achieved by taking the course of action the United States seeks to deter. Deterrence by cost imposition involves the threatened use of joint forces to convince an adversary that the costs incurred as a result of taking the undesirable course of action that the United States seeks to deter will be very severe. Finally, an adversary may be deterred from initiating a particularly threatening course of action prior to or during a conflict by constraining U.S. actions, if consistent with broader U.S. interests and war aims, to mitigate the perceived consequences/costs of inaction or restraint on the part of the adversary. Without this U.S. restraint, American actions, if viewed as highly threatening, could trigger the highly threatening adversary action we seek to avoid.

JOINT CAPABILITIES

The SD JOC remains under development and does not yet address the full scope of required joint capabilities. The SD JOC stipulates that coalition deterrence operations should be integrated where practicable, but strategic deterrence must also be viable as a unilateral concept. The

current list of key strategic deterrence capabilities identified by the SD JOC include:

- Force projection capabilities, including the capability to decisively defeat regional aggression
- Kinetic and nonkinetic Global Strike capabilities, including nuclear weapons
- Active and passive defense measures, including WME mitigation and consequence management capabilities
- Strategic deterrence information operations capabilities
- Space control capabilities

ARMY CAPABILITIES

Army capabilities that support MCO and stability operations greatly enhance the deterrent value of each, and therefore directly support the overall concept of strategic deterrence. Additionally, the following Army capabilities are unique to successful prosecution of the SD JOC, particularly in operations using the approaches of benefit denial and cost imposition.

Force Application

- Modular, combined arms combat forces rapidly deployable, in a ready-to-fight configuration, into a JOA at the time and location required by the combatant commander
- Increased SOF capabilities, including covert insertion, unconventional operations, PSYOP, civil affairs, special reconnaissance and direct action to conduct battlespace preparation in the manner and time frames required by the combatant commander
- Enhanced offensive information operations capabilities, including electronic warfare and computer network attack
- Modular combat forces tailorable as part of a joint team for limited duration Global Strike operations

Battle Command

- Battle command on-the-move capabilities that support and enable rapid, integrated and near-simultaneous operations throughout the JOA, including the land force component of the COP, real-time blue and gray force tracking, en route mission planning and rehearsal capabilities, and long-range communications
- Ground-based space control capabilities to assure JFC access to key C2 and ISR networks and systems, and deny an adversary the same

Protection

- Ground-based integrated missile defense capabilities for homeland defense and protection of forward-deployed forces and allies
- Increased CT capabilities to support and conduct CT operations worldwide
- Increased counter-WMD capabilities to support and conduct counter-WMD operations worldwide
- Increased CI and counterespionage activities to preclude the compromise of classified or sensitive information and advanced technologies
- Drugs and vaccines that protect against weaponized biological and chemical agents
- Protection against environmental and occupational hazards such as toxic industrial materials (TIM)

Focused Logistics

- Networked logistics information systems, enabled by agile, assured communications, that allow logisticians to see requirements in near real time, and provide the decision support tools necessary for sense and respond logistics
- Increased theater support capabilities for the joint force to enable synchronized shaping and decisive operations throughout the depth and breadth of the JOA

- Networked logistics information systems, enabled by agile, assured communications, that allow logisticians to see requirements in near real time, and provide the decision support tools necessary for sense and respond logistics

JOINT INTERDEPENDENCIES

Several significant (but not all-inclusive) examples of interdependent capabilities required to dominate the enemy are:

- Joint-integrated communications and ISR capabilities and networks to gain information and decision superiority and battlespace understanding, share a COP, determine the adversary's decision-making process, and enable effective JC2 of strategic deterrence operations
- Strategic air- and sealift and sustainment capabilities to support Global Strike operations

HOMELAND SECURITY JOINT OPERATING CONCEPT (HLS JOC) 6

The Homeland Security Joint Operating Concept (HLS JOC) is premised on the assumption that a secure homeland is the Nation's first national security priority and is fundamental to U.S. national security and successful execution of the Defense Strategy. Security of the homeland is essential to the Nation's ability to project and sustain power globally, to protect U.S. security interests globally and to honor U.S. security commitments, and underpins the Joint Force's ability to successfully execute MCO and SO. Moreover, given the first line of defense for homeland security is overseas, Homeland Security (HLS) is inextricably linked with stability and strategic deterrence operations.

HL JOC DESCRIPTION (Version 2.3, dated 5 September 2003)

As depicted in Figure 6-1, HLS is not synonymous with Homeland Defense (HLD), nor are HLD, Civil Support (CS), and Emergency Preparedness (EP) subordinate to HLS. The HLS JOC focuses on the strategic and operational levels, and is intended to guide the development and foster the integration of HLS applications inherent in Joint Functional Concepts, Service Operating Concepts, and Service capabilities. The HLS JOC describes how the Joint Force will conduct military operations, to include HLD, CS, and the supporting EP, in support of the larger HLS range of missions and requirements.

Figure 6-1. Homeland Security and Supporting Mission Areas

The HLS JOC describes how the Joint Force performs its responsibilities in support of securing the homeland, specifically how joint forces will conduct HLD against external threats and aggression; and provide support to civilian authorities and DOD EP. Joint Force mission sets within HLS include:

Homeland Defense (HLD)

- National Air and Space Defense
- National Land Defense
- National Maritime Defense
- Cyber Defense

Civil Support (CS)

- Military Assistance to Civil Authorities (MACA)
- Military Support to Civilian Law Enforcement Agencies (MSCLEA)
- Military Assistance for Civil Disturbances (MACDIS)

Support to Emergency Preparedness (EP) functions and activities

- Continuity of Operations (COP)
- Continuity of Government (COG)
- Other EP roles as directed

The central idea of the HLS JOC is to provide defense using integrated offensive and defensive measures to protect the homeland from external threats and aggression, thus restoring the emphasis once placed on defending the United States and its land, sea, air, and space approaches. The HLS JOC conceptually divides the world into three regions and discusses how joint force operations will be preformed in each to produce a layered and comprehensive defense of the homeland. This regional concept is fluid and does not include specific boundaries; these regions may overlap or change depending on the situation.

Forward Regions are foreign land areas and sovereign airspace and waters outside the U.S. homeland. In Forward Regions, the JOC objective is to detect and prevent threats and aggression to the United States before they can directly threaten the homeland. This JOC objective is realized through MCO, SO and SD operations. It is in this effort that the Joint Force will focus its capabilities in order to create an overwhelming first layer of homeland defense while engaging emerging threats as far from the homeland as possible. Military operations in a Forward Region will often require coordination and synchronization with multinational partners.

The Approaches is a conceptual region, extending from the limits of the homeland to the boundaries of the Forward Regions, that is based on situation-specific intelligence. Military operations in the Approaches focus on detecting and defeating transiting threats as far from the homeland as possible using the entire portfolio of joint capabilities. Military operations in the Approaches will often require coordination and synchronization with other federal agencies and multinational partners.

The homeland is a physical region that includes land masses of CONUS, Alaska, and Hawaii; U.S. territories and possessions in the Caribbean Sea and Pacific Ocean; and the immediate surrounding sovereign waters and airspace. In this region, the JOC objective is to deter aggression and defend against external threats and provide support to civil authorities, while simultaneously supporting power projection for decisive military operations in the Approaches and Forward Regions. Military operations in the homeland will often require coordination and synchronization with local and state governments and other federal agencies.

HLS JOC implementation envisions an ongoing series of synergistic operations in multiple theaters and regions to detect, identify, and defeat external threats and aggression, while safeguarding the Nation's way of life, freedom of action, and capacity to project decisive mili-

tary power overseas. The defense must be both layered and comprehensive and must encompass the capabilities of the Joint Force, Defense agencies, the interagency, and state and local authorities, as well as multinational partners.

JOINT CAPABILITIES

The HLS JOC remains under development and does not yet fully address the scope of required joint capabilities. The JOC does recognize the inextricable linkage of HLS to other JOCs, as well as the inherently interagency and multinational aspects of HLS. It follows that many of the joint capabilities highlighted in the MCO, SO and SD JOC chapters are also applicable to HLS, and that HLS planning, coordination and C2 functions and capabilities must be collaborative and linked with other federal, state and local agencies involved in HLS. The initial list of key HLS joint capabilities identified in the HLS JOC are:

Force Application

- Detect and negate potential threats to the homeland as they arise in the Forward Regions
- Detect and defeat maritime threats to the homeland

Battle Command

- Situational awareness throughout the HLD/CS/EP operating environment
- Robust, redundant, secure, decentralized, distributed, collaborative, and interoperable C4 systems and processes

Protection

- Detect and defeat ballistic missile attacks on the homeland
- Detect and defeat airborne threats to the homeland
- Detect and defeat hostile space systems threatening the homeland
- Protect and defend critical DOD physical and cyber infrastructure in the homeland
- Mitigate the effects of multiple simultaneous CBRNE events
- Full protection for DOD forces, assets, installations, and critical defense infrastructure

Focused Logistics

- Delivery of equipment, supplies, and personnel in the right quantities, to the right place, at the right time to support HLD, CS, and EP objectives

ARMY CAPABILITIES

As outlined in previous chapters, Army forces provide unique and essential capabilities to successful prosecution of MCO and SO. These operations directly support HLS operations. Army forces also provide unique capabilities that directly support Joint Force HLS mission sets of HLD, CS and EP support.

Force Application

- Modular and tailorable forces rapidly deployable in a ready-to-fight configuration, for air and ground defense of designated facilities and assets
- Modular and tailorable forces, including medical response teams, rapidly deployable in a ready-to-operate configuration, for CBRNE detection, defense and mitigation operations for specific facilities and assets or the general public
- Modular and tailorable forces rapidly deployable in a ready-to-operate configuration and interoperable with local, state and federal agencies, for a full range of civil support operations including reinforcing civilian emergency responders, comprehensive support in extraordinary circumstances as directed by the Lead Federal Agency, and engineering support including facilities repair and construction and debris cleanup and removal, in all conditions

- Enhanced lethal and nonlethal capabilities to influence the potential actions of adversaries and noncombatants in HLS operations
- Offensive information operations capabilities to include space control
- Specialized training programs for DOD personnel including training programs for Defense Coordinating Officers and Emergency Preparedness Liaison and Officers, and the DOD Emergency Preparedness Course

Battle Command

- Battle command capabilities that support and enable rapid, integrated and near-simultaneous HLS operations
- Army force HQ designed to operate as a JFLCC, and when augmented with the appropriate SJFHQ and JIACG elements, function as a JTF HQ
- Army HQ elements to coordinate support to local, state and federal agencies and provide C2 of Army forces[19]
- Army component HQ to plan, coordinate and execute land defense of CONUS, Alaska, Hawaii and U.S. territories and possessions in the Caribbean Sea and Pacific Ocean[20]
- Home Station Operations Centers to support rapid force employment and planning and analysis capabilities for employed forces
- Communications networks that provide long-range, continuous connectivity, all-weather, all-terrain, self-regulating, and self-healing communications

Protection

- Ground-based Midcourse Defense (GMD) segment of the Ballistic Missile Defense System (BMDS)
- Enhanced computer emergency response capabilities to support protection of U.S. communications and network architectures
- Enhanced emergency response capabilities and chemical and biological detection systems, including dedicated Installation Support Teams (ISTs) and Regional Response Teams (RRTs)
- Focused CI and counterespionage activities conducted in coordination with joint, other Service and national intelligence organizations to protect leading edge technologies that provide technological superiority to Current and Future Forces
- Advanced CBRNE detection, protection and mitigation capabilities that are readily accessible to facilities, assets, and the general population

Focused Logistics

- Networked logistics information systems, enabled by agile, assured communications, which allow logisticians to see requirements in near real time and provide the decision support tools necessary for sense and respond logistics
- Relationships with commercial logistics firms and organizations that leverage commercial logistics capabilities to help meet military needs

[19] The Army provides trained Active Component (AC) and Reserve Component (RC) personnel for support to local, state and federal officials and for emergency preparedness. Army forces are controlled by a number of ways. State forces are controlled by state authority. When a federal response is called for, First and Fifth Continental U.S. Armies (CONUSAs) provides C2 for those forces through several venues: Joint Task Force Consequence Management (JTF-CM) for CBRNE incidences, Response Task Force (RTF) for civil support operations, and Task Force East and West (TF-E, TF-W) to support all ground troops requested by the lead Federal Agencies (LFA).

[20] FORSCOM as ARNORTH and as JFLCC under United States Northern Command (USNORTHCOM) plays the key role in land defense and coordination of all DOD land missions and planning operations in CONUS in support of USNORTHCOM strategic objectives.

JOINT INTERDEPENDENCIES

Although each Service contributes its own unique HLS capabilities to the joint operation, each dominating its respective domain, joint interdependence is critical to improved Joint Force effectiveness. Joint interdependence is achieved through the deliberate, mutual reliance of each Service on the capabilities of other Services or agencies to optimize the overall effectiveness of the Joint Force while minimizing its vulnerabilities. Significant interdependent capabilities required for successful application of Army capabilities in HLS include:

- Assured, networked joint and national ISR systems accessible by commanders at strategic through tactical levels that support HLS operations in all conditions
- Networked joint, interagency and multinational communications systems in all conditions throughout the breadth and depth of the JOA
- Collaborative planning process and system linking joint, local, state and federal agencies, and multinational partners
- Multilevel security that will permit the exchange of information and intelligence across all friendly echelons
- Access to data resident in databases throughout the national intelligence community, and among local, state and federal agencies
- Networked joint supply and distribution systems and processes
- Commonality of doctrine, terms, graphics, TTPs, and visual tools and displays
- Integrated BMDS architectures and warning systems
- Resolution of legal issues associated with domestic use of military forces

OTHER TRANSFORMATIONAL INITIATIVES 7

This chapter addresses specific transformational initiatives including: concept development and experimentation, science and technology, business practices, transformation path, interoperability, and supporting intelligence requirements. Addressed within each initiative are the associated Army initiatives and systems necessary to achieve future Joint transformational capabilities. Army actions for these transformational initiatives fully support DOD and Joint Transformation.

CONCEPT DEVELOPMENT AND EXPERIMENTATION (CD&E)—A JOINT AND ARMY PARTNERSHIP

The Army Transformation Concept Development and Experimentation Campaign Plan (AT-CDEP) establishes a campaign of learning to address our volatile, uncertain, complex and ambiguous future. It seeks to accommodate evolutionary and revolutionary changes in close coordination with our Joint, sister Service, industry and academic partners. It outlines key areas of conceptual and prototype investigation and exploration to develop a coherently joint Future Force. The Future Force is the operational force of the future—a continuously refined vision guiding the transformation of the Current Force of today to the strategically responsive, joint interdependent, precision maneuver force capable of meeting the future needs of our Joint warfighters across the full range of military operations. The lessons of history tell us that we can not entirely anticipate every aspect of future operations, or even our exact imminent requirements. The Army's challenge is to optimize our resources to fully meet the anticipated warfighting requirements of our Joint warfighters, while remaining fully prepared to both exploit and adapt to the unanticipated events that will inevitably change our future vision.

Concepts and Experimentation: Ideas to Insights

Our preparation for the future begins with ideas. Vision, strategic guidance, operational experience, and expert projections all serve as input for concept development and experimentation. Much of this input is incorporated into the Joint Operational Environment (JOE), a framework of threat capabilities and future environment elements first developed by the Army and now adopted by the United States Joint Forces Command (USJFCOM). Future warfare studies develop select ideas into military concepts.

A military concept is the description of a method or scheme for employing specified military capabilities in the achievement of a stated objective or aim. A concept describes the employment of future forces in all expected missions against adversaries within the expected operational environment. It also describes the capabilities required to fulfill the operational warfighting ideas described within the concept.

Military experimentation is the process of exploring innovative methods of operation, especially to assess their feasibility, evaluate their utility, or determine their limits. Experimentation may include wargaming and prototype development. Experimentation defines, refines, and substantiates concepts to a level that provides a relevant framework for capabilities requirements determination (Figure 7-1).

Our military concepts are in effect a conceptual "lens on the future," shaping our estimate of future capabilities for doctrine, organizations, training, materiel, leader development, people, and facilities (Figure 7-2).

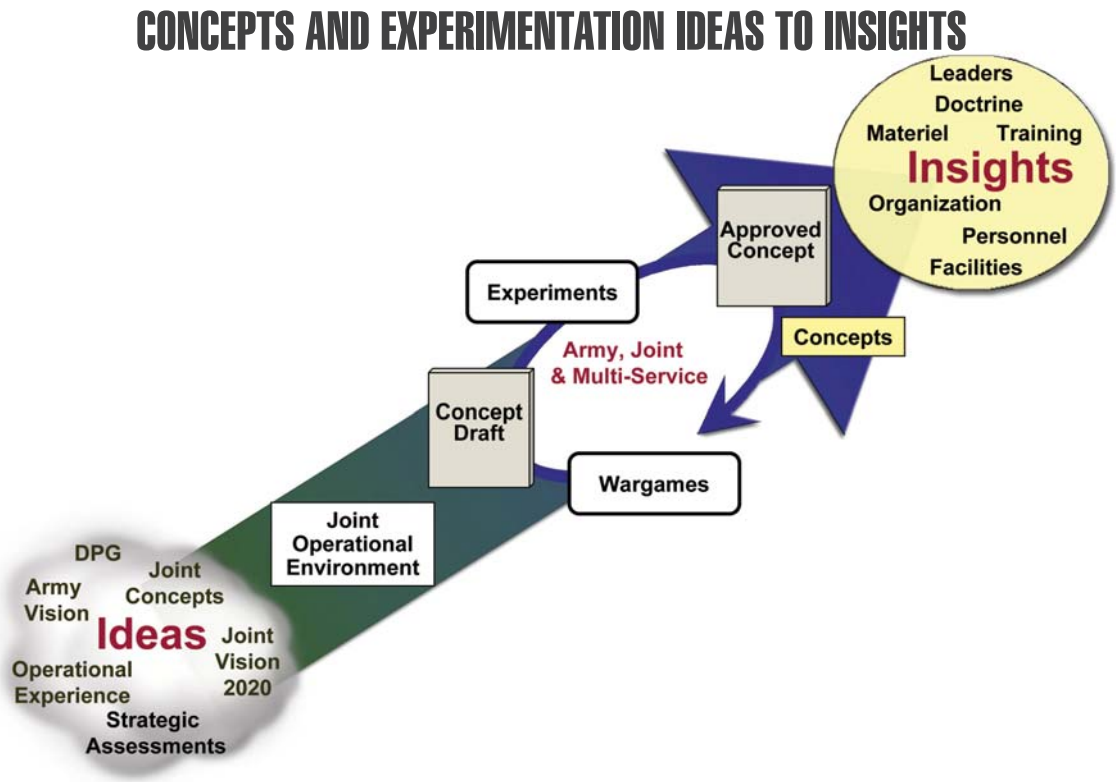


Figure 7-1. Concepts and Experimentation, Ideas to Insights

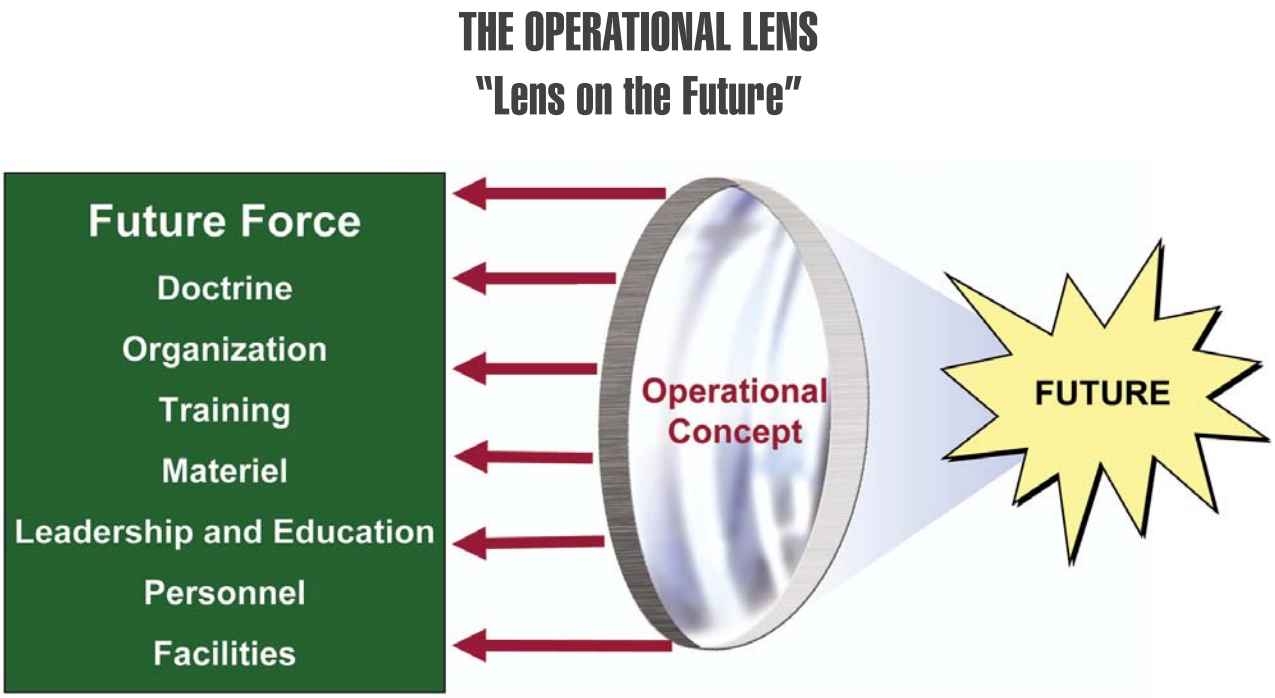


Figure 7-2. The Operational Concept—"Lens on the Future"

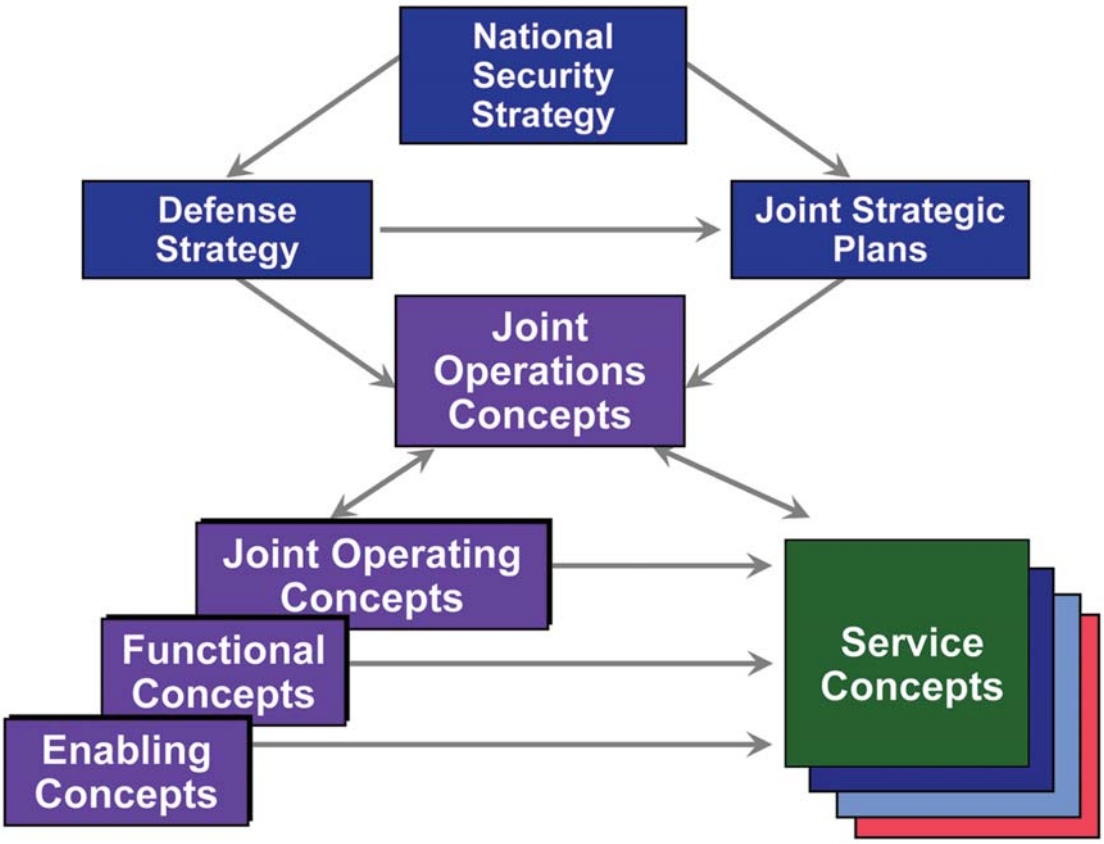


Figure 7-3. Concept Hierarchical System

The Joint Context: Concepts and Experimentation

Army concept development and experimentation is firmly nested in a joint context. Joint concepts are organized in a hierarchical system: capstone, operating, functional, and enabling (Figure 7-3).

USJFCOM conducts Joint experimentation along two pathways: prototype and concept development. The prototype pathway is focused on developing capabilities in the near term to field a SJFHQ, and its enablers, in 2005. The concept development pathway is focused on determining actionable recommendations that result from collaborative experimentation with new concepts and capabilities in the next decade. (Figure 7-4).

The Code of Best Practices for Experimentation (DOD Command and Control Research Program, July 2002) describes three fundamental types of experiments: Discovery, Hypothesis Testing, and Demonstration. These reflect both different levels of anticipated and unanticipated results and differing levels of scope from single functional area/operational theme, to integrating across multiple functional areas and operational themes. Most of our experiments will fall into the category of discovery.

Joint experimentation employs one or more of the following common scenarios:

- Major Combat Operations against an inaccessible adversary who presents a global WMD threat
- Joint operations in urban environment
- Operations against a nonstate actor with significant regional combat capability, weapons of mass effect, and ties to global terrorist organizations
- Operations against a faltering or failing state that has regional weapons of mass destruction or mass effect capability

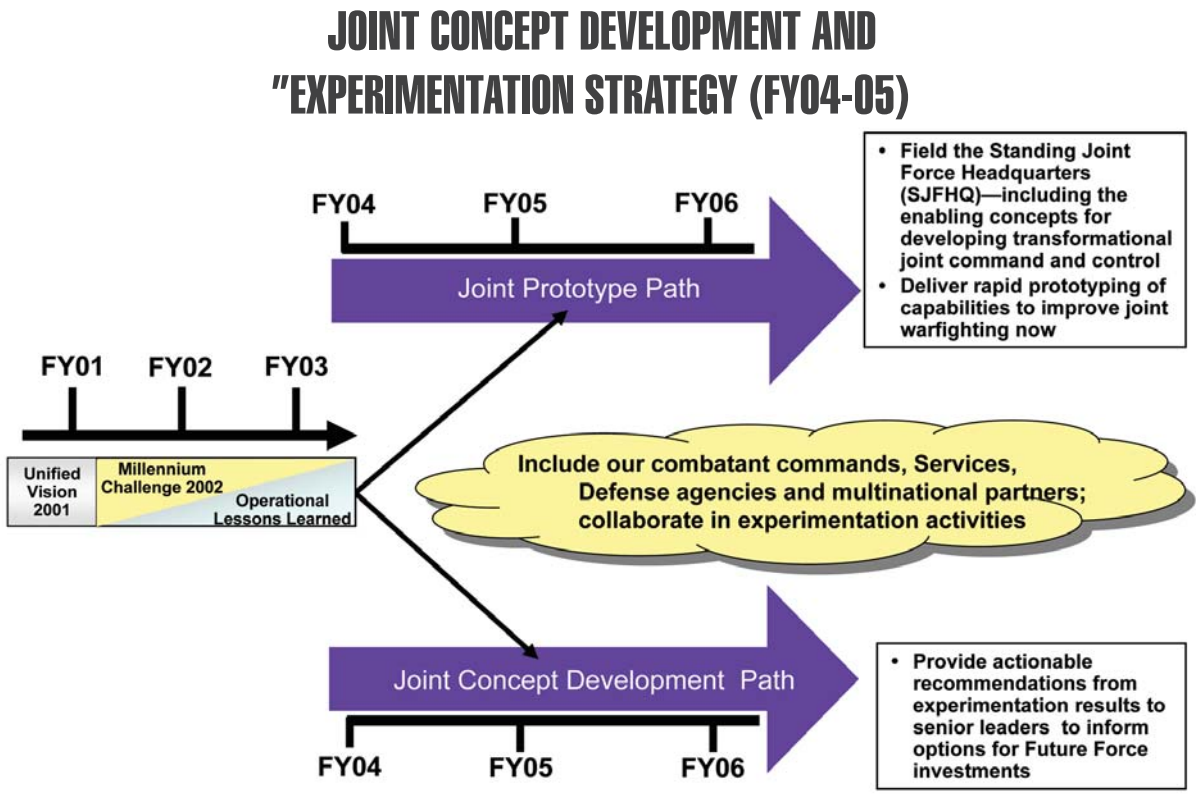


Figure 7-4. The Joint Concept Development and Experimentation Strategy

These scenarios are the basis for evaluating the Joint military challenges that were derived by USJFCOM. These Joint military challenges are categories of issues that USJFCOM uses as the basis for what gets studied at different experiments. In sum, Joint military challenges are:

- Achieving decision superiority
- Creating coherent effects
- Conducting and supporting distributed operations

Army Concept Development

As a key member of the joint team in a joint, concepts-based requirements system, the Army must develop an entire generation of warfighting concepts that support the joint effort. These concepts should follow from, among other factors, the body of joint concepts being developed. Army concept development utilizes the same hierarchical system as Joint concepts. The Future Force concept will serve as the Army's Capstone Concept; the Army's Operating, Functional and Enabling Concepts are shown in Table 7-1.

The AT-CDEP identifies six foundational operational themes to focus concept development and experimentation efforts:

- Network-centric battle command
- Operational maneuver from strategic distances
- Entry and shaping operations
- Intra-theater operational maneuver
- Decisive simultaneous and distributed operations
- Sustaining continuous, simultaneous, and distributed operations

To facilitate collaborative concept development and experimentation, the USJFCOM Joint military challenges are mapped to the AT-CDEP's foundational operational themes: (Table 7-2)

Operating Concepts	Functional Concepts	Enabling Concepts
Unit of Employment	Battle Command	Maintenance
Unit of Action	Army Aviation	Transportation and Distribution
Army Special Operations	Maneuver Sustainment	Soldier Support
Force Projection	Maneuver Support	Supply and Services
Homeland Security	Fires and Effects	Medical
	Air and Missile Defense	Explosive Ordnance Disposal
	Space Support	Information Operations
	Protection	Soldier as a System
		Army Airspace Command and Control
		Intelligence, Surveillance and Reconnaissance
		Engineer Operations
		CBRNE Defense
		Non-Lethal Operations
		Military Police Operations
		Human Resource Support
		Legal Support Operations
		Financial Management Operations

Table 7-1. Army Concepts

Joint Military Challenges	Foundational Operational Themes
Achieving Decision Superiority	■ Network-centric Battle Command
Creating Coherent Effects	■ Entry and Shaping Operations ■ Intra-theater Operational Maneuver ■ Decisive Simultaneous and Distributed Operations
Conducting and Supporting Distributed Operations	■ Operational Maneuver from Strategic Distances ■ Sustaining Continuous, Simultaneous and Distributed Operations

Table 7-2. Military Challenges and Operational Themes

The foundational operational themes are further defined into specific study areas for experimentation and analysis.

Network-centric battle command is a critical concept to enabling the Future Force operational concept. Battle command is the art and science of applying leadership and decision making to achieve success. It is the ability to make, communicate, and implement sound decisions, through superior knowledge, faster than the enemy can react, and at a controlled operational tempo. It enables commanders to lead Soldiers and synchronize all elements of combat power across echelons while on the move

and from any point in the battlespace. Battle command capabilities are the integrating backbone of the Future Force and will be essential across the entire spectrum of military operations. Consequently, the Future Force requires a revolutionary battle command architecture that is vertically and horizontally integrated (with linkages to current, Stryker, Joint, interagency, and multinational forces) from home station-industrial base to strategic, operational, and tactical units. Key study areas are:

- Decision making
- Situational awareness/understanding
- Sensors and information fusion
- Continuous joint interoperable network
- Organizational design

Operational maneuver from strategic distances (OMFSD) is the joint-enabled, rapid projection of Army formations by air and sea from points of origin outside the theater into the joint operations area, orchestrated and synchronized within the context of the entire joint force. Improved capability in this area will translate directly into increased deterrence for the future joint force, more rapid seizure of the initiative, and more rapid transition to decisive operations. The Army conducts OMFSD through the combination of mission-tailored, CONUS-based and forward-deployed forces, including pre-positioned stocks of equipment and supplies, when available, configured in force capability packages (FCP) to meet the specific requirements of each contingency. Army operational headquarters acting as the JTF HQ must be capable of planning and executing the overall deployment process in concert with the combatant commander. Key study areas are:

- Ways and means to achieve assured access
- Force deployment in combined arms configurations with integrated sustainment that permit immediate employment (deploy = employ paradigm)
- Closing the gap between early-entry and campaign forces to avoid operational pauses
- Use of multiple, unimproved entry points to increase force throughput, reduce predictability, and provide multiple operational options
- Strategic to tactical distribution
- Reduction in number of node transits and mode transfers required
- Lift capabilities that cross the strategic-operational seam to present forces in proximity to forward operating areas throughout the course of the campaign

Future Force formations will conduct **entry and shaping operations** to set the conditions for decision. Use of multiple unimproved entry points will help overcome enemy anti-access measures and increase the chances of achieving operational surprise or preemption. Ground forces will integrate fires, maneuver, protection, and information operations to ensure friendly freedom of action while denying the same to the adversary. The Future Force will also conduct forcible entry against critical objectives at any point in the campaign. Key study areas are:

- Employment/integration of joint interagency and multinational forces
- Destruction of enemy anti-access capabilities
- Intelligence preparation of the battlespace
- Building the strategic-to-tactical infospheres

Intra-theater operational maneuver is a key means to expand defeat mechanisms beyond sheer destruction. The Future Force executes joint-enabled operational maneuver by ground and air to extend the reach of the JFC and expose any part of the enemy force to destruction or dislocation. The advanced theater lift required to fully develop this capability will provide an invaluable improvement in the operational and logistical agility of the joint force overall. Key study areas are:

- Tactical vertical envelopment
- Assured mobility
- Vertical envelopment to operational depth

Once successful entry and shaping operations wrest the initiative from the enemy and begin to strip away his key capabilities, the Future Force conducts **decisive operations** to achieve accelerated decision through simultaneous, distributed operations, continuous operations at a controlled operational tempo, and direct attack of enemy decisive points and centers of gravity. Key study areas are:

- Decisive tactical combat (close fight)
- Simultaneous, distributed operations
- Multi-dimensional precision maneuver
- Pulsed logistics and transitions
- Survivability
- Networked lethality/precision engagement

The Future Force must **sustain continuous, simultaneous, and distributed operations**. Future Force sustainment will provide support across greater distances, conducting widely dispersed push-logistics-based operations. Sustainment commands within the Future Force must achieve the same degree of situational understanding as that of operational headquarters, while ensuring the COP fully supports commander priorities to optimize the efficiency of sustainment operations. Future Force operations will be effectively and efficiently sustained through distributed, transportation-based, globally networked, and reachback supported logistics capabilities. Key study areas are:

- Mission staging operations
- Adaptive organizations
- Pulsed sustainment
- Sustained operational availability
- Rapid and assured distribution

Army Experimentation

The end state of experimentation is a set of actionable recommendations to support key decisions based on analytically rigorous underpinnings, to yield the right set of integrated capabilities to enable the Future Force. The Army employs four categories of experiments: developmental, integrating, capstone, or exploratory. These reflect both different levels of anticipated and unanticipated results and differing levels of scope from a single functional area/ operational theme, to integrating across multiple functional areas and operational themes.

All experiments are executed within a joint context and are conducted using approved scenarios and validated environmental, behavioral, and performance data. Consistent performance from experimental forces is attained via the Word-Class Blue Force and World-Class Opposing Force, in one of three experiment environments: virtual, constructive, or live.

All experimentation is bounded by analytic rigor to shape the experiment and concludes with analysis to document results. The study is a structured examination of a bounded subcomponent of a concept, using quantitative measures to answer specific research questions. It provides modeling to refine concepts and shape experiment design and execution, and also provides modeling to conduct sensitivity analysis and baseline extrapolation.

Experiment results are detailed in a series of documents with increasing levels of clarity. The first document, the Emerging Insights Report is completed within 14 days of each experimentation event and outlines the significant outcomes from the event. This document forms the basis of the Insight Action Plan, maintained by the Futures Center's Experimentation Division, which assigns responsibility for follow-up on insights. The second document is the Interim Report that is published no later then 30 days after a completed experiment plan, and provides an initial analysis of the insights from all events comprising the experiment. The final document, the Final Report, captures the analytical results from the experiment. Each of these documents is posted to the Experimentation Division's Army Knowledge Online (AKO) collaboration page to enhance dissemination and to provide a centralized, searchable repository of all experiment results.

Concept Development and Experimentation Campaign Plan

The three-phased CD&E campaign plan addresses the tactical, operational, and strategic perspectives of war, shifting the developmental focus over time. The first phase focuses on setting the conditions for achieving Future Force capability this decade. The initial focus is at the tactical level to rapidly develop the FCS-equipped UA as described in the UA organizational and operational (O&O) and FCS family of systems (FoS) Operational Requirements Document (ORD). As the experimentation campaign progresses, the focus shifts to and remains at the operational and strategic levels to refine the operational UE concept and a broad range of functional concepts affecting the way we execute doctrine, build organizations and conduct training and leader development such as battle command, maneuver support, maneuver sustainment, fires and effects, and aviation. Throughout the phase, CD&E efforts will ensure all concepts are thoroughly integrated in a joint context.

The second phase completes UA and FCS development but is focused on establishing the UE and its associated pooled capabilities. This phase also addresses joint integration across the entire force, to include the UA, Force XXI, SBCT and Current Force capabilities.

The third phase, 2015 and beyond, will be designed based on results of the prior phases. This phase acknowledges the continuing nature of transformation and will extend experimentation to address developments for the Future Force and beyond, while fostering learning organization behavior and innovation.

Phase 1 (2004-2008) Objectives

- Establish DOTMLPF solutions for FCS Increment I (2010-2018) and UA
- Develop and Refine UE Concept
- Integrate UA/UE within joint context
- Integrate Future Force and Joint operating, functional and enabling concepts by examination of operational themes

Phase II (2009-2015) Objectives

- Support successful UA(-) IOC (2010)
- Support successful UA FOC (2012)
- Fully integrate UE/UA with Joint concepts and capabilities
- Establish DOTMLPF solutions for UE and FCS (Increment II)
- Establish UE (2012)
- Establish pooled capabilities for the force

Opportunities and Alternatives

It is impossible—and imprudent—to project one singular path into the future at this time. The Army addresses the unanticipated future by constantly assessing, addressing, and exploiting changes in the operational environment, emerg-

ing technology and operational lessons learned. Many of these changes will modify planned development activities; the Army uses a "spiral execution" approach that garners emerging insights and lessons learned to rapidly adapt experiments and develop excursions (Figure 7-5). Yet, other changes may fall out of the scope of Future Force development; for example, alternative future force development paths or changes intended for near-term application. While these unanticipated events are by definition impossible to predict a priori, the AT-CDEP allocates a portion of the Army's CD&E resources to address alternatives on three principal axes:

- Future to Current
- Current to Future
- Current to Current

The need to be able to adjust our Future Force development along these three axes places a premium on highly flexible concept development and experimentation and persistent learning organization behavior. To leverage our ability to rapidly inform the Current Force from demands that are emerging from lessons learned and to quickly bring mature technologies that are realized during Future Force development, we must respond to regional combat commanders with rapid prototyping, field experimentation and modeling and simulations as required. We will pursue funding to support this effort (currently requesting $20M/year beginning in FY05). All proponents should examine and program within their budgets to accommodate this type of experimentation.

The execution of the AT-CDEP must routinely incorporate alternative thinking—the consideration of alternate operational environments, concepts, and capability solutions. The combination of resulting required capability sets will allow robust Future Force designs, with capabilities suitable for multiple anticipated environments. If resourced and adequately developed, concept development and experimentation should proceed along branches

HOW THE ARMY LEARNS

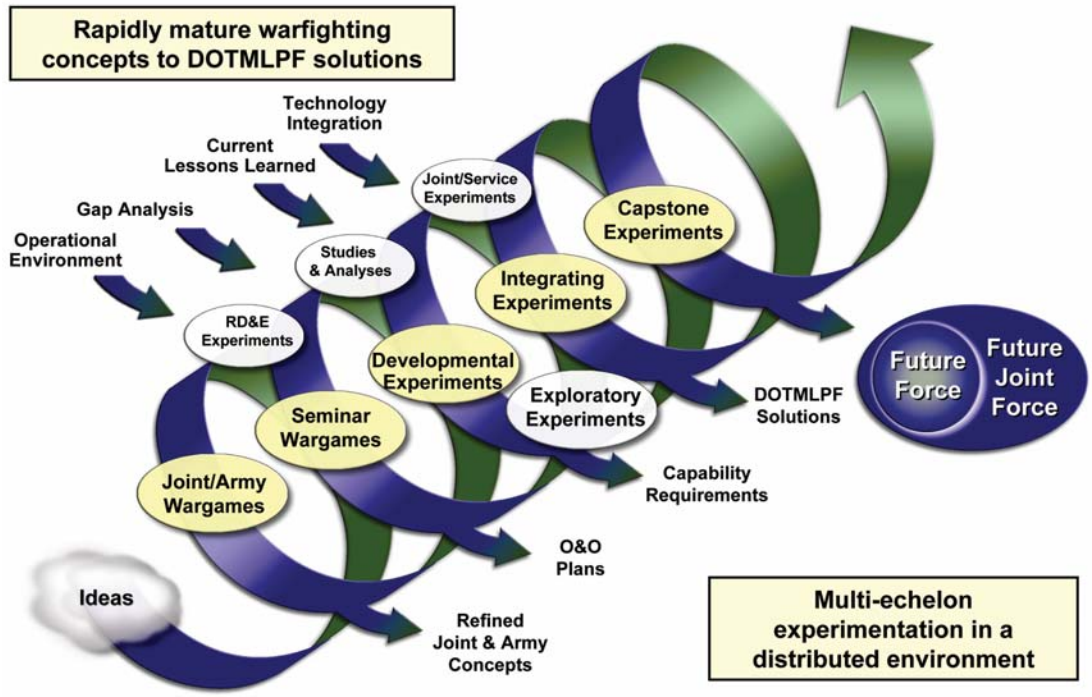


Figure 7-5. How the Army Learns

and sequels, following permutations to give depth to our investigations.

Integration

The complex, integrated nature of the Future Force demands extensive integration of experimentation not only across DOTMLPF domains but also with other development efforts. Warfighting experimentation, S&T development, test and evaluation, and industry and academic efforts must synchronize experimental efforts to gain synergy from similarly focused events. To ensure integration of CD&E processes, TRADOC integrates via long-range campaign planning, semi-annual CD&E conferences, quarterly CD&E Colonel-level task force meetings, senior leader reviews, and collaborative venues for ongoing collaboration.

Joint

A key function of the AT-CDEP is inculcating a joint cultural mindset, both through collaborative CD&E and through experimentation with training and leader education. By collaboration with USJFCOM and sister Services, the AT-CDEP seeks to conduct born joint experimentation that will assist this cultural transformation. Training and leader education experiments will further contribute to realizing future warfighters proficient in joint concepts and operations—joint-centric training leads to a joint-centric mindset.

Future Warfare Studies and Wargaming

Future warfare studies are designed to generate, develop, and assess ideas about the conduct of military operations in the future joint operational environment (JOE). The study uses small, focused groups to develop or address a problem space for the purpose of generating ideas by looking at deficiencies (identifying the problem) or the need to address something more (e.g., new technology or capability) within the context of a future strategic and operational level setting. The studies develop and/or adopt ideas about military art, S&T, and human and organizational behavior, and they use a series of discovery and hypothesis testing experiments to assess the utility and feasibility of those ideas.

As the ideas mature and their utility and feasibility are established, the studies integrate them with developing and approved concepts and capabilities by demonstrating their utility through Joint and Service wargaming activities.

Science and Technology

Science and technology enable capabilities within the Future Force. Projected technology developments, projected into experiments, allow the experimenter to examine future possibilities. In concept work, by varying technology capabilities, alternative futures can be envisioned. In developmental work, performance parameters derived from credible technology projections provide realism, allowing combat developers to build Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF) solutions around a set of technical capabilities. As technologies mature, actual software, middleware, and hardware prototypes can be used in experiments, validating both the technologies themselves and the DOTMLPF capability solution. This type of experiment can support both routine developmental efforts and, in exploratory experiments, cascading capability solutions for the Current Force.

Studies and Analyses

Studies and analyses support the Futures Center's concepts-to-capabilities work as the Army's architect of the future by providing organized analytic efforts to assist the investigation of emerging concepts, to inform experimentation, and to assist with deriving actionable operational insights. Implementing TRADOC priorities, study efforts examine DOTMLPF issues, force design plans, and weapons mixture allocation strategies. Using historical and ongoing studies, the Studies and Analysis Division, in coordination with the Experimentation Division, formulates a study strategy structured and

synchronized with the operational focus areas and candidate study issues presented in the AT-CDEP. The Studies and Analysis Division also provides a repository, the Automated Study Information System (ASIS), of study information, both emerging and final, to the study community. Once development is completed and migrated into a web-enabled, collaborative environment, ASIS will provide a single-point access for study efforts in support of experiments.

Modeling and Simulation

Modeling and simulation (M&S) are the tools that enable many aspects of the CD&E process. The spectrum of application of M&S includes tabletop map games, human-in-the-loop (HITL) simulations and simulators, closed-form M&S, and controlled field experiments involving live forces, constructive and virtual simulations. These tools provide the capability to achieve analytically rigorous underpinnings for refinement and evaluation of requirements and solutions.

Modeling and simulation can operate independently or can be networked from disparate sites. Army M&S communities, such as TRADOC and Research, Development and Engineering (RDE) Command, interface M&S to support inter-Service CD&E events. Support for the AT-CDEP may involve interfacing with USJFCOM, multi-Service, and multinational partners over configurable networks. The Battle Lab Collaborative Simulation Environment (BLCSE) is the key enabling environment to achieve the above.

Within TRADOC, the battle labs, schools and centers, and the TRADOC Analysis Center (TRAC) require standard experimentation, scenario generation and data development process to support Army CD&E efforts.

Modeling and simulation must continually evolve functionality to support AT-CDEP events. Focus groups, such as Focus Area Collaborative Teams, work to develop research plans so that the required functionality is present to properly support future experimentation and analytic efforts. M&S must enable the Army and the Joint community to address key areas such as service data management, terrain generation, modeling the warrior, information sharing and battle command.

Battle Lab Collaborative Simulation Environment

The AT-CDEP optimizes available resources to ensure efficiencies of scope and to compress developmental timelines. A key enabler of this is the BLCSE. BLCSE enables experimentation in a persistent, distributed, linked environment with common data to reduce travel and facility costs while offering expanded opportunities, both in terms of frequency and additional player participation. Expanded frequency and participation facilitates rapid parallel development of subordinate and functional concepts at the TRADOC centers and schools, within the TRADOC battle labs, and with other commands and environments. Likewise, embedded collaborative testing (digital and live) on the part of TRADOC and U.S. Army Test and Evaluation Command (ATEC) ensures efficiencies by eliminating the need for redundant or repeated testing.

By connecting the BLCSE to USJFCOM's Distributed Continuous Experimentation Environment (DCEE), other Services, combatant commanders, allied nations, and various agencies may participate in Army experimentation as required, enabling the Army to refine concepts, identify required capabilities and explore promising insights in conjunction with its warfighting partners.

Devils Advocate and Red Teaming

By design, the AD-CDEP deliberately accounts for the credibility of the product through an ongoing devil's advocate review process both within the design of the plan itself and throughout execution. As the plan developed, it is vetted with senior active and retired military officers, USJFCOM, and members of the Army, Joint, and DOD staffs. During all phases of the campaign, experimentation efforts will undergo continuous

devil's advocate review and analysis to ensure experimentation goals and objectives are consistent with, and fully support the Army's Transformation goals.

SCIENCE AND TECHNOLOGY

The Army Science and Technology (S&T) Program is key to developing and achieving the transformational capabilities envisioned for Current and Future Forces. Transformation to the Future Force cannot be slowed while the Nation is engaged in the GWOT. Indeed, operations in Afghanistan and Iraq have validated the need for transformational change. The S&T Program has been shaped and focused to speed development of the key technologies that will enable a land combat force vital for decisive joint combat operations.

Most importantly, the Soldier system must remain at the center of both the Current and Future Forces. The primary technical challenges are to develop and mature the technologies to enable a lighter force with overmatching lethality that is survivable while simultaneously reducing logistics demands. To achieve this S&T strategy, the S&T Program is developing the following:

- Technologies and prototype systems for the Future Force—with the FCS as the cornerstone
- Innovative technology solutions to achieve leap-ahead or paradigm-shifting warfighting capabilities including:
  - Mobile, secure, self-organizing networks for seamless joint operations
  - Low-cost, multispectral sensors to find and identify the enemy
  - Stand-off and all-weather precision munitions (missiles and guns) for decisive results
  - Tunable lethality (solid state laser, high power microwaves, nonlethal weapons) for effects-based operations
  - Autonomous unmanned air and ground systems for increased survivability and reduced logistics
  - Immersive simulations and virtual environment technologies for Soldier, leader and unit warfighter training
  - Demand-reduction solutions for fuel, munitions, and water
  - Advanced collective and individual protective technologies, especially against biological and chemical weapons

The Army S&T Program has a dynamic portfolio of technology investments that is responsive to warfighter needs today and into the future. S&T seeks technological solutions that can be demonstrated in the near term, explores the feasibility of new concepts for the midterm, and seeks the imaginable for an uncertain far-term future.

More than 97 percent of the Army S&T Program is pursuing technologies that support the Future Force. FCS is the main thrust of the near-term S&T program and represents about one-third of all S&T funding. Other high payoff investment areas include C4 and ISR, unmanned air and ground systems, precision lethality, survivability and basic research for leap-ahead capabilities.

Path to Transformation

The S&T Program is the engine of change that pursues technology opportunities with the potential to change the nature of warfare. Careful stewardship of these resources identifies the appropriate balance in high-risk, high-payoff technologies for the far term and nearly mature technologies for the midterm, based upon military utility in the relevant time period. The portfolio mix among the near-, mid-, and far-term investments depends on both the urgency of warfighter needs and the maturity of enabling technologies.

The near-term priority (FY04-05) is on maturing and demonstrating essential technologies

for the Future Force, with major emphasis on the FCS. Technology investments in this time frame will provide the foundation for accelerated acquisition programs to field Future Force capabilities in this decade. Key areas of investment include precision lethality, integrated survivability, C2 + C2 + ISR, Soldier system of systems, semiautonomous air and ground robotic vehicles, human engineering, reduced logistics demands, Soldier training, mission rehearsal, and medical technologies. Advanced technology demonstrations provide mature technologies for rapid insertion into Army acquisition programs.

The midterm focus (FY06-12) is on developing and demonstrating technologies for follow-on increments to the FCS and other new capabilities for the Future Force. The Army will demonstrate and then incrementally integrate Advance Warrior into Land Warrior capabilities over the time period to complement networked capabilities in the FCS. Today's investments in applied research will provide technology transition products during the midterm in areas such as precision lethality, full-spectrum survivability, battle command on-the-move, advanced simulation, personnel technologies, and logistics demand reduction. Applied research activities focus on the development of components, models, and new concepts through in-house and industry efforts.

In the far term (FY13-20), Army investments in basic research this decade will facilitate revolutionary warfighting concepts. The products of these investments in areas such as nanoscience, biotechnology, smart structures, and compact power and energy sources will enable significant enhancements that maintain technological overmatch in land power forces in the next decade. The Army S&T Program collaborates with other Services and industry to mature advanced aerospace technology to develop intra-theater airlift to achieve operational imperatives of the Future Force. Basic research activities include all efforts of scientific study and experimentation focused on the understanding of fundamental phenomena with a high potential to significantly improve land power capabilities. In addition to Army laboratories and in-house research centers, academia and industry also conduct basic research.

To have an agile and innovative program, the Army also uses insights from independent, external examinations of the program. The Army's S&T community is a change agent for transformation and helps identify technology implications across the DOTMLPF domains.

TRANSFORMING ARMY BUSINESS PRACTICES

The DOD vision to improve business processes consists of a fully integrated knowledge environment that enables generation and sustainment of warfighting capability through a fully integrated logistics enterprise, based upon collaborative planning, knowledge management, and best business practices. The following examples highlight Army transformation of business practices. In general, the Army's strategy for business practices focuses on those unique functions necessary to generate prompt, decisive and sustained land power capabilities.

Army Logistics Enterprise Integration

The Army Materiel Command (AMC) has the mission to integrate all Army logistics functional requirements. AMC accomplishes this mission through a fully integrated digital data environment based upon operational logistics and systems architectures and best business practices within the government and commercial sectors. Logistics, financial, acquisition, and product data fuse together in an environment that operates in a near seamless fashion from the Soldier on to the Major Army Commands (MACOMs), Services, DOD, and industry. AMC maximizes worldwide networking capabilities, operating as a single virtual enterprise, to provide visibility of transactions throughout the end-to-end logistics process, while protecting from intrusions.

AMC published a high-level Army logistics operational and systems architecture called the Single Army Logistics Enterprise (SALE).

SALE provides a single point of entry with other business areas within the Joint community and across the Army. SALE will integrate and optimize business processes to provide commanders at all echelons with significantly improved capability to build and sustain combat power and maintain readiness. Access to near real time data facilitates a COP to instill confidence through information reliability, accuracy, and visibility.

Industrial Base Strategic Initiatives

Modernization of the industrial base is critical to support the Future Force and the FCS. The goal is a 21st century industrial base that consists of a complementary and synergistic mix of private sector and government industrial capabilities. Within that framework, the Army relies on the commercial industrial base and its capabilities to meet materiel requirements to the maximum extent practicable. The Army's organic industrial base consists of facilities that produce ammunition, store munitions, manufacture components, and maintain equipment. Accordingly, the organic industrial base strategy is diverse and specific to the different types of organic facilities such as ammunition plants and storage depots, manufacturing arsenals, and maintenance depots. Across all three types of facilities is a common emphasis on implementing lean philosophy and on pursuing public-private partnerships to improve efficiencies, optimize utilization, and upgrade core capabilities.

Ground Systems Industrial Enterprise (GSIE)

The GSIE is an initiative of the Tank-automotive and Armaments Command (TACOM). TACOM operates as a single business unit while efficiently utilizing core capabilities of Anniston Army Depot, Watervliet Arsenal, Red River Army Depot, Lima Army Tank Plant, Rock Island Arsenal, Sierra Army Depot, and other installations supporting AMC. GSIE simultaneously transforms the core capabilities at those specific installations to meet the needs of Army Transformation while it fosters additional partnering arrangements with industry and the field. The Army implemented GSIE on a provisional basis on 10 October 2002.

Performance Based Logistics (PBL)

This initiative, which capitalizes on the Performance-based Business Environment (PBBE) concepts, is part of the Office of the Secretary of Defense (OSD) Acquisition Reform. It emphasizes solutions as opposed to process. In other words, the goal is to specify what is wanted and not how to accomplish that goal. The Total Life Cycle Systems Manager (TLCSM), the Program Manager (PM), negotiates Performance Based Agreements (PBAs) with the customer and Product Support Integrator (PSI). In support of the PM's PBA with the customer, the PM negotiates a PBA with the PSI who in turn negotiates with support providers. AMC, as the sustainment manager for the Army and in support of the PM, assumes the lead for integrating PBL support concepts and other Combat Logistics System (CLS) instruments to assure the customer receives integrated sustainment support. AMC initiates agreements with the Army Acquisition Executive, solidifying integration of the PM's TLCSM responsibilities with AMC's sustainment management responsibilities. Quarterly weapon status reports (WSRs) and reviews of systems of systems planning provide oversight and quality control.

Simulation and Modeling for Acquisition, Requirements, and Training (SMART) Initiative

The next generation of Army M&S will allow the Army to address the Future Force within the framework of emerging joint concepts. Modeling and simulation enables the up-front effort that leads to a better understanding of the required capabilities of the Future Force.

The Army will capitalize on the SMART Initiative to more quickly provide solutions for the Future Force. SMART is designed to provide a framework for a disciplined, collaborative environment to reduce costs and time required to provide solutions to Army needs. SMART ex-

ploits M&S tools and technologies to address system development, operational readiness, and life-cycle cost. This is accomplished through the collaborative efforts of the acquisition, requirements, training and operations communities.

Experimentation, analysis, and testing through SMART will form an important component of the development strategy for the Future Force and FCS. Analytical models will evaluate the cost-benefit of acceptable and feasible options to identify the preferred alternative that meets the needs for Future Force design, development, and acquisition. Modeling and simulation as well as the testing infrastructure will evaluate component, system, and system-of-systems capabilities to meet identified performance requirements.

Emerging and future concepts will employ technologies, unit constructs, tactics, and procedures unlike those of today's Current Force. Using existing M&S tools and creating M&S tools to develop and analyze these concepts allows developers and engineers to refine concepts and designs in the virtual environment at a much faster pace with the benefit of more iterations. Under the SMART Initiative, M&S investments in the areas of advanced concepts and requirements, life-cycle cost models, and embedded and enhanced training simulations will reduce risk and identify, support, and transition M&S leap-ahead and high-payoff opportunities.

Innovative Prototyping Methodologies

As previously discussed, the Army uses operational prototyping for organizational concepts and technologies. In the area of virtual prototyping, the Army leverages ever-increasing computer capabilities and the digital transformation occurring in numerous industries to reduce time required to conceptualize, design, engineer, test, evaluate, and manufacture new products in a synthetic, virtual environment with computer-based M&S. The following are some strategies illustrating the diversity of approaches:

- **The Future Combat System (FCS).** The use of M&S underpins the prototyping methodology to be utilized in the development and test and evaluation (T&E) of the FCS.
- **Rapid Prototyping: The Rapid Aerostat Initial Deployment (RAID).** Rapid prototyping was proven effective in Operation Enduring Freedom to solve an urgent theater requirement for an enhanced capability to detect and identify threat movement at sufficient distances to enhance tactical decision making. The Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS) Project Office identified a low-cost materiel solution to fill this operational need within 30 days.
- **Integrated Product Team: The Patriot Battle Command Post (BCP)**. The need was identified for a Patriot BCP to meet May 1998 Operational Requirements Document (ORD) threshold requirements in several categories. The government was established as the prime integrator for program execution, and tasked with developing the system segment specification. The program was managed using a government-led Integrated Product Team (IPT) supplemented by multidisciplinary sub-IPTs. This approach proved to be significant risk mitigation by providing users functional disciplines (e.g., system engineering, software, test and evaluation, safety, quality) and other stakeholders early input to the design. This approach significantly reduced schedule and cost, with the first five units being delivered to the user in less than two years from the initial concept.

INTEROPERABILITY

This section focuses on the Army's process and structure for achieving joint, interagency and multinational interoperability. Interoperability is an important enabler across the JOCs for Joint Force operations. U.S. allies and prospective coalition partners are eager to maintain interoperability with the Army as it transforms.

The TPG states, "It is in our interest to make arrangements for international military cooperation to ensure that rapidly transforming U.S. capabilities can be applied effectively with allied and coalition capabilities." A component of the Army's interoperability goal is to ensure that these select military forces keep pace with Army Transformation and avoid unnecessary degradation in multinational force compatibility. The Army International Activities Plan (AIAP) focuses on crafting mutually beneficial army-to-army relationships with those countries that are contributing to U.S. Army missions or are most likely to do so in the future. AIAP uses senior leader and bilateral staff talks; American, British, Canadian, Australian Armies Standardization Program (ABCA) and North Atlantic Treaty Organization (NATO) standardization activities; and other venues to influence foreign planning and programming decisions, exchange information, leverage advanced technology, and share lessons learned.

Participation in the Joint Technical Architecture Collaborative Environment

A key enabler to transforming DOD is an interoperable Joint Force that is dominant across the entire spectrum of military operations. The Joint Technical Architecture provides that collaborative environment for all Service systems. Joint Technical Architecture-Army (JTA-A) is the comprehensive set of baseline standards required for Army and Joint interoperability—it is the set of building codes upon which Army command, control, communications and computers/information management (C4/IM) systems are based.[21] The JTA-A ensures C4/IM related systems and products meet interoperability, performance, and sustainment criteria, and provides the technical foundation for a seamless flow of information and interoperability among all systems that produce, use or exchange information electronically. The JTA-A mandates standards and guidelines for system development and acquisition that may dramatically reduce cost, development time and fielding time for improved systems.

The Army's Chief Information Officer (CIO)/G-6 is the Army's Technical Architect and is responsible for development of the JTA-A and the validation and integration of all technical architectures into the Army Knowledge Enterprise (AKE) architecture. On 1 July 2003, the Army's CIO/G-6 implemented a zero-tolerance approach to technical architectural compliance across the Army.[22] All AC, RC and National Guard C4/IM systems were required to register in the Army Information Technology Register by 31 December 2002, and must comply with the JTA-A by 30 September 2006.

Rigorous Testing and Evaluation

To verify compliance, the Army's CIO/G-6, in coordination with the U.S. Air Force, established the Army's Net Worthiness Certification Process on 2 April 2003.[23] The Net Worthiness

[21] Department of Defense Directive, *Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)*, 11 January 2002; Title 40 USC. (Clinger-Cohen Act of 1996), Chapter 25; Title 10 USC, Sections 133, 2223, and 2224; Army Regulation 25-1, *Army Information Management*, 31 May 2002.

[22] Army Knowledge Management Implementation Plan, 5 February 2003, para. 2-2 c. 1.

[23] Department of Defense Directive, *Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)*, 11 January 2002; DOD 8510.1-M, *DOD Information Technology Security Certification and Accreditation Process (DITSCAP) Application Manual*, 31 July 2000; DODI 5200.40, *DOD Information Technology Security Certification and Accreditation Process (DITSCAP)*, 30 December 1997; Secretary of Defense Memorandum, *Defense Acquisition, Attachment 2, Operation of the Defense Acquisition System*, 30 October 2002; *Interim Defense Acquisition Guidebook* (formerly 5000.2-R), 30 October 2002; AR 25-1, *Army Information Management*, 31 May 2002; AR 70-1, *Army Acquisition Policy*, 15 December 1997; AR 73-1, *Test and Evaluation Policy*, 7 January 2002; AR 380-19, *Information Systems Security*, 27 February 1998; Army Enterprise Architecture Development Plan (AEADP), Version 2.1; CIO/G-6 Memorandum, A*rmy Net worthiness Certification*, 8 April 2002; and CIO/G-6 Memorandum, *Net Worthiness Certification Program*, 2 April 2003.

Certification Process checks for JTA-A compliance, ensures a coordinated network-centric information structure, and verifies that all C4/IM systems on the Army Network are certified as to the capabilities, limitations, and potential impact to the AKE. The process also applies to all Army Active, Reserve, National Guard, DOD, joint, combined, federal, non-DOD, and coalition weapon and information systems, national security systems, and all infrastructure programs that use or have interoperability requirements with the Army Enterprise Infrastructure (AEI). Net worthiness identifies and mitigates risk to the AEI by assessing whether it can support the C4/IM system; if there is a negative impact to existing C4/IM systems, if the C4/IM system introduces any security vulnerabilities, and if the C4/IM system can be managed and sustained.

Incorporation of IP-based Protocols

To ensure that acquisition of C4/IM systems is consistent with GIG policies and architecture, all future systems will be compliant with DOD-established IP-based protocols. Critical components of effectively implementing Internet protocols are the selection of protocol profiles and when they will be implemented in each system. The protocol profiles determination and implementation are managed through the software blocking process (SWB) as described in the next section.

Achieving Interoperability

Systems are developed and managed by independent organizations. This can lead to significant interoperability problems when systems are delivered and have to operate in a system of systems (SoS) environment. The Army's solution to manage this and the varied dependencies between individual system programs is the SoS SWB. The SWB process is designed to facilitate the development and sustainment of SoS interoperability, across hundreds of programs, in support of Army Transformation. This is achieved through a robust dynamic collaborative process of information sharing and issue resolution managed by a flexible tiered set of integrated forums.

Achieving Capabilities to Post Before Processing

JFCs have four fundamental requirements for intelligence and information. Those requirements are: timeliness, correctness, precision, and assured access. The concept of post before process is an attempt to satisfy the timeliness requirement and, as a second order effect, places conditions on the assured access requirement.

Post before process is more accurately stated as tasking, posting, processing, and using (TPPU), and describes the intelligence process from intelligence requirements definition to the commander's decision to take action based on receipt of data, information, or knowledge-based products. This concept is a redefinition of the previous concept of tasking, processing, exploiting, and disseminating (TPED) initiated by the then Assistant Secretary of Defense for Network and Information Integration (ASD-NII). The process change was intended to address the issue of latency. The hypothesis is that by posting the raw data first, it would be simultaneously available to multiple users (i.e., commanders, shooters and analysts) to be used for multiple purposes. Acceptance of the information is based on confidence gates defined by the user.

For each user, latency would then be defined only as the time necessary to post the data or information to a product library where it can be accessed. This is especially true for information collected electronically, such as electronic intelligence (ELINT). It becomes more problematic when other data sources are considered, such as communications intelligence (COMINT) internals; imagery, both electro-optical (EO) and synthetic aperture radar (SAR); and, in some cases, HUMINT reporting where, in the absence of advanced analytical tools, some human analysis is required to make the data understandable. The Army intelligence community endorses the concept of TPPU, but understands that post before use is a complex concept because there are

many levels of data, products and information to be posted. There is raw data, which is the type most commonly referred to in TPPU discussions. There is also fused data, fused information, and finished products. Each posting is used differently based on the ability of the end user (decision maker, shooter, or analyst) to handle the data and the intended use of the data.

A fundamental concern is the lack of a standardized procedure/process for identifying to users what is raw data and what is processed information. Establishing standards across the intelligence and user communities will assist commanders in defining their confidence gates as mentioned above.

The principal Army intelligence concern with the post before processing concept is to ensure that it addresses both targeting and achieving situational understanding. Often, when discussing post before processing, there is a tendency to focus on targeting, almost to the exclusion of discussions about achieving situational understanding. For land forces, it has to be more than simply putting a crosshair on a target, i.e., content counts. Commanders need to understand what it all means. In the future, commanders will need to understand beyond the traditional three questions of "Where am I?" "Where are my friends?" and "Where is the enemy?" to answer the questions "What is the enemy doing now and what will the enemy do in the future?" So in any discussion regarding posting before processing, it must be clear that data does not equal knowledge and posting does not equal understanding. Without proper analysis, a COP could be a casualty of post before process.

Post before process promises to reduce latency and may allow quicker and more independent action. The Army accepts this premise and embraces the intent behind it. Since an unconditional adoption of this principle can conceivably defeat the purpose for which it was instituted, the Army will balance its implementation of post before process based on the outcomes from experimentation.

SUPPORTING TRANSFORMATIONAL INTELLIGENCE REQUIREMENTS

As the larger Defense intelligence community transforms, the Army plays a major part in developing investment strategies, business processes, and positioning of resources to carry out the mission of producing intelligence that supports tactical operations and ensures information superiority. The Army ensures that the needs of the tactical commander are protected during Defense intelligence transformation.

Army Intelligence Transformation represents a fundamental change to the way the Army thinks about and performs intelligence collection, analysis, production, and dissemination. The core of this transformation effort evolves traditional intelligence reporting to the creation of understanding. This transformation focus emphasizes the cognitive requirements of knowledge creation. Intelligence Transformation changes the focus from systems and processes to solutions that improve the warfighters' knowledge and understanding of the battlespace. The overarching principle is that fused intelligence and assessment capabilities provide dominant knowledge to the commander at the point of decision. Dominant knowledge enables precision application of effects through informed decision making and predictive cognizance. Intelligence Transformation will deliver high-quality and timely intelligence across the range of military operations. Army intelligence provides the threat, gray, and environmental characterization components of the COP.

Fundamental to achieving this new capability is developing actionable intelligence that is warfighter-centric, specific to the needs of the decision maker across the full range of military operations. Actionable intelligence empowers greater individual initiative and self-synchronization among tactical units—accelerating the speed of decision making. The collaborative analytical environment that encompasses Joint Force organizations and analytical centers from national to tactical echelons enables the fusion of

information across the force and supports actionable intelligence.

The intelligence challenge is to redefine Army intelligence so that every Soldier is both a contributor to and a consumer of the global intelligence. Soldiers in the performance of their duties contribute to the intelligence network and in turn receive actionable intelligence tailored to their missions. While tactical commanders nearest to the fight can leverage modular, tailored packages to develop intelligence, they are also supported by a grid of analytic centers focused on their intelligence needs. This will require a change in the Army-wide culture and mindset. To achieve this end, Army intelligence pursues six fundamental ends that are aligned within the three components of the overall Army Transformation Strategy.

Transform Culture

- Change Army Intelligence Culture—Create a campaign-quality, joint, and expeditionary mindset through doctrine, operational and personnel policies, regulations, and organizations to develop intelligence professionals competent from "mud to space" who know "how to think" and are focused on the commander at the point of decision

Transform Processes—Risk Adjudication Using the Current to Future Force Construct:

- Fix Training—Reshape training to provide the volume, variety and velocity of intelligence and non-intelligence reporting
- Rapid Technology Prototyping—Develop an agile technology enterprise that enables the intelligence force to respond to a learning enemy with the best technical solutions available in real time

Transform Capabilities Through Force Transformation:

- Create the Framework—Create an information and intelligence grid inherently joint, providing COP, universal visibility of assets, horizontal and vertical integration, and situational understanding, linking every "Soldier as sensor and consumer" to analytic centers
- Enhance Tactical Echelons—Provide robust, flexible, modular, all-source collection and analytical capabilities, born joint, and part of a tactical force—capable of independent action but empowered by linkages to a global grid and analytic and collection overwatch
- Transform HUMINT and Counter-Intelligence (CI)—Grow a CI and HUMINT force with a more tactical focus that provides more relevant reporting

To achieve these objectives, Army intelligence is making changes across the DOTMLPF domains. These changes include the following:

PEOPLE AND LEADERSHIP

People remain the centerpiece of Army Intelligence Transformation. The cultural and mindset changes identified above as essential to intelligence transformation begin with a highly trained, motivated, professional intelligence corps of Soldiers, civilians, and contractors.

The Army develops regional experts capable of understanding and predicting adversary actions. The Army resources the institutional training base with current expertise and experience to assure the development of leaders and Soldiers through all phases of the professional military education system. The Army must also develop and nurture intelligence professionals competent from mud to space who know how to think and focus on commanders' requirements at the point of decision.

DOCTRINE

Changes to the way Army intelligence operates begins with changes to its culture. The creation of a campaign-quality force with a joint and expeditionary mindset pervades doctrinal, operational and personnel policies, regulations and organizations. The Army remains cognizant

of evolving operating concepts within the joint and national intelligence communities to ensure the requirements of warfighters are fully integrated into ongoing transformation activities outside the Army and DOD. Within these activities, Army intelligence concepts are integrated into joint doctrinal development through coordination with TRADOC and USJFCOM.

Army intelligence doctrine will expand to emphasize information exploitation to improve the Army's ability to identify a target on the battlefield and to communicate that information quickly to the warfighter for action. In addition, it supports the overall JFC's precision application of effects.

A focal point of DOD's thrust to fully exploit network-centric warfare is the development of persistent surveillance. In support to this goal, the Army will develop supporting persistent surveillance capabilities throughout the global battlespace. This provides the commander near-continuous access to the priority intelligence targets. The objective is to develop network-sensing suites that tailor their observations to the adversary's rate of activity. The goal is to combine the broad spectrum of current and future sensors into an effective intelligence tool that is geared to the activity of an adversary. The amassed information is input into an Internet protocol where it is universally available to all warfighters. This approach involves a paradigm shift in how raw data is entered into the network. Instead of analysts processing raw data into information for input into the network, the raw data will be placed on the network for empowered users to exploit for their own particular requirements. The decision on what is important moves from the entity that captures or analyzes the data to the person who uses it.

ORGANIZATION

The Army intelligence structure must be tailored to address 21st Century adversaries. Integrating with the GIG, Army intelligence provides the intelligence and environmental input to the joint COP and Running Estimates. This provides universal visibility of assets, horizontal and vertical integration, and situational understanding, linking every Soldier as a contributor and consumer to analytic centers. The fundamental characteristics of this framework are interoperability, support to new methods of warfighting, and adaptability across a wide variety of threats.

The Army transforms CI and HUMINT to correct the deficiencies evidenced in recent real world operations. The CI and HUMINT force will become more tactically oriented, provide more focused tasking and relevant reporting, and ensure that information is cross-cued with other collectors to include non-intelligence specific human collectors. Intelligence Transformation ensures CI and HUMINT forces are better trained to routinely interact with open source intelligence (OSINT), document exploitation (DOCEX), linguists and all source analysts, in order to protect the force and shape the environment.

Army intelligence transforms those organizations that play a critical part in maintaining the linkage between tactical forces and intelligence organizations at the operational and strategic levels. The Army's Intelligence and Security Command (INSCOM) is one such organization. The transformation of INSCOM into an operational headquarters represents one of the major initiatives within Army Intelligence Transformation. INSCOM conducts intelligence, security and information operations for military commanders and national decision makers. Through its four geographically oriented theater intelligence brigades/groups, INSCOM supports the specific needs of combatant commanders for I&W, CI and force protection, electronic warfare, information operations, support to contingency or combat operations, intelligence preparation of the battlefield, single and multi-discipline intelligence analysis, and S&T intelligence production. The intelligence products and data developed in these efforts are integrated into the intelligence product libraries and intelligence databases that permit tactical

units to rapidly respond to crises with no cold starts.

INSCOM has eight other worldwide groups or activities that focus primarily on a single intelligence discipline or function. These organizations are available in a reinforcing role, enabling any combatant commander to use INSCOM's full range of unique capabilities, such as intelligence support to information operations.

The INSCOM Information Dominance Center monitors potential trouble spots worldwide and prepares to support contingency operations with IO-related products, should the need arise.

INSCOM's National Ground Intelligence Center (NGIC) supports the Joint Force by providing scientific and technical intelligence (S&TI) and general military intelligence (GMI) on foreign ground forces. The NGIC also manages the Army's Foreign Materiel Exploitation Program and foreign materiel acquisition requirements and constitutes a single authoritative source for comprehensive ground forces threat to the Army and other Services. INSCOM also has major responsibilities in the areas of CI and force protection, electronic warfare and information warfare, and support to force modernization and training managers with a wide range of current and futures-oriented ground capabilities assessments.

TRAINING

Army Intelligence Transformation trains its military and civilian workforces by improving the Army's ability to teach analysts "how to think" and "how to do" vice "what to think." More importantly, Intelligence Transformation expands the Army's intelligence training to include Soldiers who have not previously been considered part of the intelligence force. As the Army adopts the position of "every Soldier a collector and consumer of intelligence," the Army will develop programs of instruction for integration into the curriculum of all TRADOC schools.

The Army reshapes training to provide the volume, variety and velocity of intelligence collection and analysis and non-intelligence reporting to stress the intelligence and operations systems in a Joint SASO and MCO environment. At the combat training centers, the Army improves intelligence play to ensure commanders and Soldiers receive the same type of support provided during real-world operations.

For the civilian workforce, Army intelligence is exploring the development of a professional education system similar to the officer and noncommissioned officer programs. Army intelligence is developing certification requirements linked to advancement and levels of responsibility.

MATERIEL

Army intelligence enhances tactical echelons—provides robust, flexible, modular, all-source collection and analytical capabilities, born joint, and part of a tactical force—capable of independent action but empowered by linkages to a global grid and analytic and collection overwatch. These enhancements change the emphasis from reconnaissance to persistent surveillance, giving the Joint Force the ability to strike at a time and place of its own choosing, with surprise. This requires surveillance on demand—fused with other systems—that integrates information and provides decision superiority.

Army intelligence integrates rapid technology prototyping into the transformation process. Army intelligence develops an agile technology enterprise that enables the intelligence force to respond to a learning enemy with the best technical solutions available in real time.

- Army intelligence supports Effects Based Operations (EBO). Army ISR provides the capabilities to identify critical targets, measure and monitor the progress of those targets, and provide indications of effectiveness for Joint Force effects-based campaigns through a combination of programs and initiatives. To cite but a few, Army ISR:

- Develops and promulgates doctrinal concepts that are predicated on intelligence core competencies
- Sustains and modernizes existing systems through service life extension programs, advanced technology integration, and preplanned product improvements
- Develops requirement statements, builds, tests and procures new systems
- Organizes, trains, mans and equips intelligence and non-intelligence units that support intelligence, surveillance and reconnaissance missions
- Participates in the development of and complies with DOD and commercial standards that permit exchange of data and information horizontally and vertically within the Army and within the joint, interagency, and multinational communities to enable commanders to achieve dominant situational understanding

Key Army programs and initiatives supporting these efforts include the DCGS-A, the Aerial Common Sensor, the family of Unmanned Aerial Vehicles (UAV), Prophet, Comanche, and Sentinel Radar. In the future, these systems, when integrated with other Army, joint, interagency, and multinational collection capabilities, form a ubiquitous, integrated, and networked sensor grid that provides the commander persistent surveillance throughout the battlespace. Chapter 8 and Annex B discuss these systems in greater detail.

FACILITIES

Home Station Operations Centers support contingency operations across the spectrum of conflict while also supporting day-to-day peacetime military operations. As part of the Army's overall facilities plan, Army Intelligence Transformation upgrades and recapitalizes institutional and organization training facilities to enhance force protection and improve the exchange of intelligence information. Army intelligence is also investigating the integration of dedicated collective training centers for all Military Intelligence entities at each Combat Training Center.

This chapter described specific transformational initiatives required by the TPG. Addressed within each initiative were the Army initiatives and systems necessary to achieve Joint transformational capabilities. Those transformational initiatives and systems are in full support of DOD and Joint Transformation. The next chapter details the Army's programs that support Defense Transformation and demonstrate the interdependence of Army and Joint Force capabilities.

BUILDING TRANFORMATIONAL CAPABILITIES

8

The first chapter of the ATR explains the Army Transformation Strategy and details Army processes for developing transformational capabilities from an inherently joint perspective. Chapter 2 discussed battle command and how fully networked battle command capabilities bridge Current to Future Forces and enable interdependent network-centric warfare. Chapters 3 through 6 discussed Army capabilities and Joint interdependencies necessary to support JFCs' execution of the JOCs. The previous chapter covered additional transformational initiatives in support of Defense Transformation efforts. This chapter describes the Army's efforts across DOTMLPF activities to build transformational capabilities. The JOpsC states people are the cornerstone of the future Joint Force. In covering the DOTMLPF domains, the chapter starts with the human elements (Personnel; and Leadership, Leader Development, and Education).

PEOPLE—THE HUMAN DIMENSION OF TRANSFORMATION

Transformation begins and ends with people. The human dimension of the military's transformation remains the crucial link to both the realization of future capabilities and the enhanced effectiveness of current ones. Army human resource (HR) policies, systems, and enablers encompass military, civilian, contractor, joint and multinational forces to provide the Joint Force with the right individuals and units, at the right place, and at the right time. Human resources support to the Future Force is critical to enabling full-spectrum operations.

The Army has started to install comprehensive, integrated, and interoperable HR programs, policies and procedures across the Army and within the joint, interagency, and multinational environments. In FY03, the Army activated the Human Resource Command (HRC). The Army HRC merged the AC and RC personnel commands and will also include the Civilian Human Resources Agency, no earlier than FY05. As a field operating agency under the Army's G-1, HRC is at the center of the Army's initiative to mold personnel functions into a corporate structure. HRC enables efficient and effective management of active duty and Army Reserve Soldiers worldwide.

The Army electronic Human Resource System (eHRS) converts over 200 human resource systems into a single web-based system. Army eHRS includes the Defense Integrated Military Human Resource System (DIMHRS), a DOD-directed software capability using the PeopleSoft commercial off-the-shelf (COTS) management system. DIMHRS includes modules to provide additional capabilities such as training management and manpower analysis. The new Army HR system provides commanders with the tools to accomplish the core battlespace functions of personnel accounting and strength reporting (PASR), casualty management, replacement operations, postal operations, and essential personnel services.

The Army's transformed HR system will institutionalize personnel support for a lifetime of service. The HR system will formalize the concept of a "continuum of service" by providing personnel services and pay support "in and out" of active duty, based on the needs of the Army and the individual. Soldiers will have the option to serve in different components or on different statuses of continuing service throughout their careers. This option spans from their original accession to multicomponent service in the Active Army, Army National Guard (ARNG),

or Army Reserve and follow-on service as a Department of the Army Civilian (DAC), retiree or contractor.

In addition to increasing the effectiveness of the HR system, the Army is transitioning to a Force Stabilization and Unit Manning System (FSUMS) that synchronizes assignments of Soldiers to units' operational cycle. The FSUMS minimizes personnel turbulence as a training distracter, allowing unit commanders to attain higher levels of operational capability with a cohesive combat team. The Army is reviewing policies, procedures and regulations to support the shift from an individual-centric to unit-centric environment. The goal of the FSUMS is to provide ready and effective combat formations to combatant commanders while reducing turbulence, increasing predictability and providing stability for Soldiers and families. The Army is implementing the FSUMS with the 3 rd SBCT in Alaska in FY04.

Army civilians play an important role in accomplishing the Army's mission. The Army is implementing a senior Army work force initiative to sustain an experienced corps of civilian leaders and managers to provide essential support to Army forces. These civilian leaders manage vital government functions, provide institutional knowledge, and supervise Army civilians and contractors in operational theaters.

LEADERSHIP, LEADER DEVELOPMENT, AND EDUCATION

The art and science of leadership continues to be our stock in trade, with leader development the lifeblood of the profession. The Army supports Joint Transformation by developing innovative and adaptive leaders comfortable operating in joint, interagency and multinational environments.

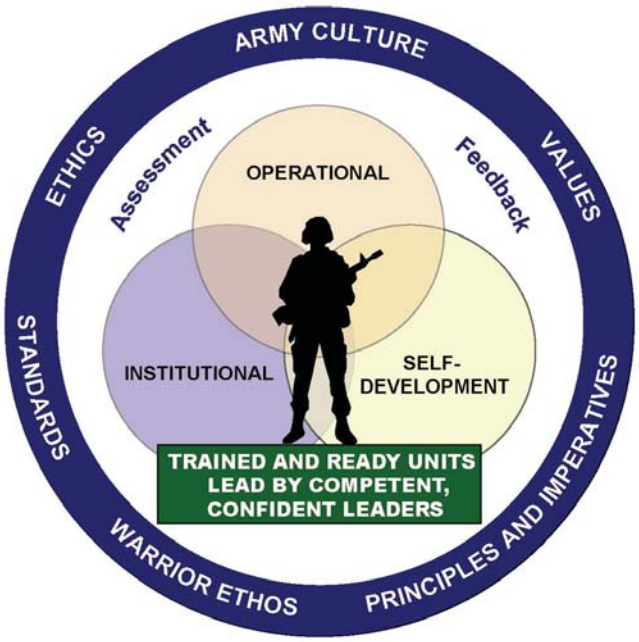
Leadership is about people. Composed of enduring competencies, its preeminent characteristic is developing trust between the leader and the led. Leadership is influencing people—by providing purpose, direction and motivation—while operating to accomplish the mission and improving the organization. The definition of leadership and the Army's leadership framework of "Be, Know, Do" is relevant to realizing both Current and Future Force capabilities.

Leader development is the means for growing leaders prepared for the challenges of full-spectrum joint force operations. The Army is transforming leader development and training programs to focus on gaining and sustaining the high levels of technical and cognitive skills essential for operating future systems and integrating future technologies. Future Force leaders must possess the following traits: multifunctional, comfortable with ambiguity, knowledgeable on information technology and system of systems operations, and capable of intuitive assessments of situations for rapid decision-making.

Leader development transformation occurs by exploiting education and information technologies within the institutional, operational, and self-development domains of leader development. These learning domains will have a fully embedded, integrated, seamless education and training architecture. This architecture will use distributed, global, LVC environments and provide continuous reach. Assessment and feedback on performance and self-development will occur on-demand to allow leaders to grow their competencies earlier in their careers. Figure 8-1 illustrates the Army Training and Leader Development Model.

Professional Military Education (PME) transformation integrates structured programs of instruction across officer and noncommissioned officer (NCO) training and education through a common training scenario (CTS). Officers and NCOs at resident institutions, home station, and on deployment via distributed learning will conduct real-time training on planning and executing full-spectrum operations within the CTS. Operational and strategic level education starts earlier in leaders' careers to inculcate the joint and expeditionary mindset. The Army has started

ARMY TRAINING AND LEADER DEVELOPMENT MODEL



- Progressive and sequential and continuous
- Educational and operational experiences interwoven
- Operational experience includes mix of home station, Combat Training Centers and, while deployed, in Army and joint, interagency and multinational environments
- Gaps in knowledge/skills filled thru self-development accessing networked systems
- Assessment and feedback at individual, organizational, and Army levels promote readiness

Figure 8-1. Army Training and Leader Development Model

to implement the Basic Officer Leader Course (BOLC) to provide all new lieutenants with a common set of skills and leadership competencies. The course instills the warrior ethos at an early stage and produces leaders positioned for success in the joint operational environment. Assignment-Oriented Training (AOT) and education prepares leaders and Soldiers to hit the ground running. AOT increases the relevance and readiness of units by tailoring training and providing knowledge to personnel focused on the immediate requirements of their next unit of assignment. PME will continue to be universal, progressive and sequential, with emphasis on continuous, life-long learning. Timelines for accomplishing PME and fostering commitment to life-long learning are flexible and adaptive to support the readiness of units. Current career paths will evolve to incorporate Future Force developmental requirements.

Current and Future Forces rely on the enduring competency of the Army to grow leaders and on the corresponding trust developed between the leader and the led. The transformational essence of leadership development is the movement from three separate but complementary pillars to a balanced, integrated, and progressive model. This new model enables full-spectrum-capable Army forces to increase the dominance of the Joint Force. Growing competent, adaptive and self-aware leaders, comprising the Army warrior culture, is essential to instill a culture of innovation in the Army. These leaders are the centerpieces of a campaign-quality Army with a joint and expeditionary mindset.

TRAINING

The Army must develop Soldiers and leaders to ensure they are competent and confident in their ability to lead at the levels assigned. Achieving a ready Current Force today and a transformed Future Force requires a similar transformation in the way units train for joint operations. To meet JFCs' needs in current and future operational environments, training must prepare the force to learn, improvise, and adapt

to constantly changing threats in addition to executing doctrine, missions and tasks to standards. Training must also accommodate the unique requirements of AC and RC to assure total force readiness.

The Army's Training Transformation initiative, supporting the June 2003 Defense Department Training Transformation Implementation Plan, provides dynamic, capabilities-based training and mission rehearsal for Army forces to accomplish their mission in joint operations. Objectives for the Army's initiative include:

- Preparing forces for new warfighting concepts
- Continuously improving joint force readiness by building capabilities from Service education and training resources to joint education and training resources to fulfill combatant command requirements
- Developing individuals and organizations that intuitively think joint
- Developing individuals and organizations that improvise and adapt to emerging crises and rapidly incorporate operational experiences and lessons learned
- Achieving unity of effort from a diversity of training means

Training transformation begins by changing behaviors. Creating, storing, imparting, and applying new knowledge throughout the force, individually and collectively, fosters these changes. Three capabilities form the foundation for training transformation—Joint Knowledge Development and Distribution Capability, Joint National Training Capability, and the Joint Assessment and Enabling Capability.

Joint Knowledge Development and Distribution Capability. Current and Future Forces must have a joint and expeditionary mindset, possessing the intellectual capability to intuitively think joint. The intellectual interoperability required to integrate Army capabilities into the Joint Force comes from the acquisition of Army skills with a mastery of joint concepts and doctrine. Future Joint Force leaders must reach new education and training standards by continually improving individual knowledge, skills, and abilities to achieve desired effects in decisive joint operations. Training Transformation leverages the use of knowledge to improve Army readiness by enabling personnel to think in terms of joint concepts, and by building upon Service education and training foundations: distance learning, embedded training, PME, multi-player online gaming, aviation training, and communities of practice (institutional training).

Joint National Training Capability. The Joint National Training Capability, as the integrating environment, provides training to the full complement of Defense organizations. Active and Reserve Component forces from a single Service train in a realistic joint context with other Service forces and joint battle staffs using extensive simulation support. Battle staffs from joint HQ, component HQ, and 10 tactical headquarters train and rehearse using actual command and control systems with operating forces represented through simulation. The Joint National Training Capability builds an environment in part from Army national training capabilities to improve vertical and horizontal training of staffs in operational planning, rehearsal and execution.

The Joint Assessment and Enabling Capability (JEAC). The JEAC ensures systematic assessment of Training Transformation plans, programs, and investments throughout the Department to produce continuous improvement of Joint Force readiness. The Joint Training System (JTS) emphasizes joint training as necessary to fulfill the mission essential tasks of the combatant commands, while enhancing the Services' competencies. The Training Transformation initiative links the focus of Service training to the JTS and increases the quantity, quality, and priority of joint training. Army training and assessment capabilities enable this joint capability to produce a force capable of interdependent network-centric warfare.

ORGANIZATIONS

As discussed in Chapter 1, creating modular organizations is an important component in achieving ready and relevant dominant land power capability for the Joint Force. The Army is in the process of redesigning two of its divisions to enhance modularity of the Current Force.

Over the last four years, the Army has developed the organizational constructs for truly network-centric capable tactical formations—the SBCT for the Current Force and the UA for the Future Force. The Materiel section of the chapter presents additional detail on these units.

The Army has also designed Future Force UEs. UEs are tailorable, higher-level echelons that integrate and synchronize Army forces for full-spectrum operations at the higher tactical and operational levels of conflict. They focus on battles, major operations, and campaigns in support of joint operational and strategic objectives. They participate in all phases of joint operations from initial entry to conflict termination in any form of conflict and operating environment and in all weather and terrain conditions.

UEs can command and control Army, joint, and multinational forces. They perform the C2 functions as the Army Forces (ARFOR) component, JFLCC, or the JTF. They have the inherent capacity to interact effectively with multinational forces as well as with interagency, nongovernmental organizations, and private organizations.

The general-purpose quality of this aspect of the Future Force ensures its long-term relevance to adaptive, sophisticated threats and the frequently changing requirements of the joint operational environment. At the operational and higher tactical levels, UEs provide the JFC with an extraordinary combination of options to exploit opportunities and respond to uncertainty across the spectrum of conflict. Through the conduct of multiple decisive tactical actions, executed at high tempo, UE operations lead quickly to the enemy's operational disintegration and the successful achievement of campaign objectives. Within this framework of decisive operations, the Army's ability to close with and destroy enemy forces remains critically important.

The Medical Reengineering Initiative (MRI) is a good example of modularity. MRI promotes scalability through easily tailored, capabilities-based packages that result in improved tactical mobility, reduced footprint, and increased modularity for flexible task organization. This design enables the JFC to choose among augmentation packages, thus enabling rapid synchronization of desired medical capabilities. Several initiatives and processes are in place as strategies to mitigate resourcing risk. One example is the Hospital Optimization and Standardization Program (HOSP) that safeguards and stretches limited modernization dollars and personnel authorizations within AC CONUS-based hospitals without compromising readiness. The Adaptive Medical Increments (AMI) initiative increases the range of options for responsive support through the rapid deployment of capabilities-based, mission-tailored, cohesive medical increments.

Another example of organizational initiatives is the Army-Guard Restructure Initiative (AGRI). The AGRI includes efforts to redesign existing Army National Guard formations into Multifunctional Divisions (MFD) and Mobile Light Brigades (MLB). MFD and MLB provide new capabilities as part of the Army's program to rebalance AC and RC to develop more modular, strategically responsive organizations while cultivating and institutionalizing a joint and expeditionary mindset throughout the force.

DOCTRINE

Doctrine is a set of fundamental principles that guides actions. TRADOC has developed the Future Force Capstone Concept as well as subordinate and supporting concept and capabilities documents. At the same time, TRADOC developed the doctrine for the Current Force's SBCTs to support the Army's goal to go from

concept to initial operating capability (IOC) in three years.

TRADOC has also undertaken an object-based publishing initiative to rapidly integrate proven concepts, lessons learned, tests and experimentation results into Army doctrine for maintaining and sustaining the Current Force as the Army transforms to the Future Force. The effort decomposes doctrine and selects mission training plans (MTPs) and lessons learned into low-level, stand-alone pieces (called chunks) of information. Doctrine developers classify the chunks for easy retrieval based on a classification scheme—a taxonomy. The chunks then become objects. A doctrinal object is the lowest level of self-contained doctrine that has practical application to the warfighter. Object-based publications provide greater efficiencies by replacing the complicated hierarchy of manuals. This one-time entry of information eliminates redundancies and creates web-based relational doctrine that links all appropriate information for the Soldier. Object-based doctrinal publications provide the Soldier combined arms and other doctrine, tailored for specific needs. The Soldier can then store this information for later use. Additionally, doctrine developers can quickly reassemble objects to form traditional doctrinal manuals.

MATERIEL

The Army is taking specific steps to develop and field systems that enable Current and Future Forces to provide the capabilities the JFC requires to execute the JOCs. Many of these capabilities come from the procurement and fielding of critical transformational systems and families of systems including:

- The Stryker Family of Armored Vehicles
- The Network, to include the Warfighter Information Network-Tactical (WIN-T)
- The Joint Tactical Radio System (JTRS)
- The Distributed Common Ground System-Army (DCGS-A)
- Soldier Modernization
- The Comanche Armed Reconnaissance Helicopter
- The Future Combat Systems (FCS)
- An Army-standard and Joint-interoperable Battle Command System (BCS)
- Precision Munitions
- Air and Missile Defense Systems
- Critical Sensors
- Distribution-based Logistics (DBL) systems

The Army is investing in other critical technologies based on Future Force capability requirements to inject into the Current Force to enhance immediate needs of the Joint Force. The following section highlights materiel programs and related initiatives organized by the functional concepts.

Battle Command. Battle command capabilities bridge the Current to Future Force and enable interdependent network-centric warfare. As discussed in Chapter 2, battle command covers the Joint Functional Concepts of Joint Command and Control and BA. Recent combat experience has shown the value of shared situational awareness in conducting network-centric operations. The Army is developing organizations and fielding equipment to capitalize on these important lessons and insights.

Good Enough Battle Command. Operation Enduring Freedom, OIF and other military operations have demonstrated the importance of shared situational awareness to enable the Joint Force to support knowledge-enabled strike and maneuver. The combatant commander's need for greater situational awareness allowed the Army the opportunity to field improved blue force tracking capabilities to Army, Joint and coalition forces in OIF. This OIF finding has provided the impetus for planning and fielding the same C2 capabilities throughout Army formations.

Initial Army analysis and Joint findings identified the essential battle command capabilities and established the resourcing requirements to

meet current combatant commanders' needs. The Army has coined this critical first step as the battle command Good Enough strategy.

The Good Enough strategy is a capabilities-based effort based on OIF JFC requirements. The plan defines the good enough capability and sound fielding strategies consisting of reprioritization of existing Army Battle Command System (ABCS). This good enough plan uses existing resources available in the ABCS program to standardize software by April 2004, integrate only essential additional capabilities to ensure joint interoperability, and distribute this standardized capability to the Current Force.

Army analysis and Joint findings provided the following insights into essential capabilities:

- Joint and coalition interoperability, a requirement to meet joint interoperability existing and emerging standards over time
- Friendly locations, a need for a near real time, digitized visualization tool to display locations of all Services, allies, coalition and interagency formations within the battlespace
- Current enemy situation, a need for a digital visualization tool to display and provide knowledge of all enemy formations in the battlespace
- Running estimate, a collaborative, predictive tool and capability tied to the commander's critical information requirements and decision making
- Graphic control measures, a need for a management and visualization tool to display operational graphics in relationship to the JOA and terrain
- Commander's situation report; a digitized capability to share unit status to include personnel and logistical information to higher, and adjacent units
- Fragmentary order, a digital capability to exchange information changes of mission, intent, priorities with higher, lower and adjacent units in the battlespace
- Fire support coordination measures, a need for a digitized, visualization and management tool that enables the execution and deconfliction of fires

Following the Good Enough strategy, the next step in this effort is determining Current Force command post standardization by echelon and unit type. This step requires a balance between resources, current operational requirements and transformation efforts. Command post standardization encompasses the above findings to establish the core capabilities and build common hardware, communications, organizations, procedures and command platforms by unit type and echelon. The goal is unit command posts by type and echelon with equal capabilities, common systems, seamless operations and standard training requirements.

Good Enough battle command is part of the overall Army Battle Command Way Ahead Strategy. The Army battle command Way Ahead Strategy is a capabilities-based strategy that encompasses the intent of JBMC2 and applies operational experiences and lessons learned. The intent is to provide an improved capability now through technology inserts distributed across the Current Force to ensure units have the same capabilities and are interoperable with the Joint Force. The Army is also developing a single BCS-based on capabilities articulated from the JOCs and current JBMC2 guidance. The end state is the standardization and improvement of future battle command capabilities while enhancing current battle command capabilities.

The Army's current effort revolves around standardizing Army battle command software and exploiting the advantages of Force XXI Battle Command Brigade and Below-Blue Force Tracking (FBCB2-BFT). This effort produced a fielding strategy, named Leader Distribution option, which establishes a density level of equipment throughout the Current Force. The Key Leader Distribution option also prioritized and synchronized the fielding to current units participating in OIF and OEF as well as scheduled follow-on units.

Operation Iraqi Freedom and OEF findings continue to inform Army battle command efforts. In close coordination with the U.S. Marine Corps and under the leadership of the Joint Staff, the Army is merging blue force tracking efforts and capabilities into a single joint capability. Simultaneously, the Army is synchronizing its transformation efforts to accelerate improved battle command capabilities and reprioritize battle command efforts in support of the Joint Force.

The Global Information Grid (GIG). The Army views the GIG as the critical backbone of the Joint Force. The GIG architecture spans space, air, and ground domains. In coordination and compliance with JFCOM and DOD's JBMC2 guidance, the Army continues to develop its architecture efforts as a member of the joint team with the intent of synchronizing its networked capabilities into the GIG. The Army Knowledge Enterprise Architecture (AKEA) defines the Army's portion of the GIG architecture. The AKEA leverages WIN-T and JTRS capabilities to form a single Army Enterprise Infostructure (AEI). By entering the GIG, the Army expects to benefit from the seamless end-to-end capabilities that will enhance its warfighting capabilities. Specifically, tactical units will gain significant capabilities through the upcoming integration of software-programmable, multiband communications systems that exploit adaptable and high-capacity waveforms. As Future Force network capabilities integrate into the GIG, the Army also expects to leverage highly mobile, self-organizing, self-healing, multilevel secure, resilient, and ubiquitous networking capabilities.

Current communications networks provide an inflexible backbone, limiting the commander's scheme of maneuver and ability to conduct command and control. Tactical network performance has historically been severely constrained by bandwidth limitations and interoperability issues. To overcome these limitations, the Army has leveraged high-capacity commercial satellite networks to support urgent tactical requirements

Figure 8-2. GIG Components

such as on-the-move and at-the-quick halt battle command. These commercially based satellite communications (SATCOM) capabilities will migrate to DOD SATCOM networks as the Army integrates its future capabilities into programs developed under the Transformational Communications Architecture. Specifically, the Army will migrate from a circuit-based and bandwidth constrained communications architecture to a net-centric, internet protocol (IP)-based GIG architecture. Future networks will enable the commander to conduct his C2 functions from home station, en route, during entry, and while deployed regardless of how austere the area may be.

When the GIG architecture is linked to transformational communications enhancements such as dynamic radio frequency (RF) allocation (with software adaptable waveforms), laser communications, satellite cross-linking, and fiber offloading of the space segment, then many of the existing constraints will be eased. The transformation of Army communications is an inherently joint process, and the joint interde-

pendencies cannot be overstated. Crucial to the GIG and Army networks transformation efforts will be the success of DOD and Army programs including GIG-Bandwidth Expansion, Teleport, Global Broadcast Services, JTRS and WIN-T. Equally crucial to the GIG transformation is bandwidth optimization and the success of Network Operations (NetOps) initiatives covered in Net-centric Enterprise Services and GIG Tranformational Communications.

Implementing and fielding improved network and battle command capabilities by introducing mature technologies including satellite communications to the Current Force enhances the combatant commander's operational capabilities. Because of the exponential requirements growth for SATCOM for both reach and intra-theater beyond-line-of-sight (BLOS) communications, the Army augmented its military SATCOM capabilities with commercial SATCOM. In light of the immediate OIF/OEF SATCOM requirements, the Army expedited baseband (data packages) and tactical SATCOM equipment for the Southwest Asia (SWA) theater. The Army is currently reviewing its SATCOM equipment requirements and tactical employment concepts to realign with rapid maneuver operations concept requirements.

Working in the collaborative information environment, Army forces harness the power of the ongoing revolution in information technology to net people and systems—horizontally and vertically—within the joint network. The Army leverages the capabilities of the Good Enough Battle Command System while providing additional capabilities to complement Joint command, control, communications, and computers, intelligence, surveillance, and reconnaissance (C4 and ISR) systems to build and enhance the Network. These systems enable the JFC to see first, understand first, act first, and finish decisively. The Army has several systems that are vital enablers to achieve network-centricity—WIN-T, JTRS, and DCGS-A.

The WIN-T is the Army's contribution to the GIG. WIN-T received a successful Milestone B decision from OSD in FY03. The Army will field elements with WIN-T starting in FY06.

JTRS is a major transformational effort for the Joint Force. JTRS is a family of interoperable, digital, modular, software-defined radios that enables voice, video and data capabilities as well as wideband networking waveform. The Army will begin fielding Cluster 1 to first units during FY07.

DCGS-A is a family of systems and an integral component of the Army's ISR networking strategy. DCGS-A migrates disparate ISR systems into a joint common and interoperable multi-intelligence architecture to improve the JFC's ability to react within the enemy's decision cycle. DCGS-A nodes located at each Army and joint echelon task, process, exploit, and disseminate Army, joint, national, and coalition ISR sensor data and information in support of Joint operations. These physical nodes transparently interoperate 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.

The DCGS-A program employs a blocked-approach development and acquisition strategy. The Army plans to demonstrate a DCGS-A Block I capability in FY04 with the XVIII Airborne Corps and a multi-echelon DCGS-A capability with the III Corps in FY05. The Army will field the Future Force capability starting in FY08.

Critical Sensors. The Army is deploying tactical unmanned aerial vehicles (TUAVs) within its units while at the same time developing the Aerial Common Sensor (ACS) for the Future Force. Netted sensors are critical to achieve battlespace awareness for the Joint Force.

Family of TUAVS. Current Army Unmanned Aerial Vehicle Systems (UAVS) capabilities in-

clude the RQ-5A Hunter, RQ-7A Shadow 200, and the Raven systems. RQ-5A Hunter and RQ-7A Shadow will meet Current Force UAVS needs until the development and fielding of Future Force UAVS capabilities.

UAVS located in FCS UA brigades will possess enhanced capabilities using a common platform and modular payloads. They will integrate into the established communication architectures. The Army divides UAVS into four classes to support different levels. Class I will be small man-packable UAVS employed by platoon size units for RSTA operations providing information directly to the Soldier. Class I will have a low-altitude flight profile that can provide perch-and-stare capability. An ongoing Advanced Concept and Technology Demonstration (ACTD) is evaluating the Micro Aerial Vehicle (MAV). The objective of the MAV ACTD is to demonstrate a backpackable, affordable, easy-to-operate, and responsive reconnaissance and surveillance system. The system will provide small units with useful, real-time information of difficult to observe and distant areas or objects.

Class II will be a vehicle-mounted and launched UAV for use by infantry companies and MCS platoons. It will provide target acquisition data and designation for LOS, BLOS and NLOS cooperative engagements with the Class II operating at a low-altitude flight profile. Class III UAVS will provide reconnaissance and target acquisition and designation data for precision fires assigned to NLOS battalion and reconnaissance detachments within the combined arms battalions. This UAV is a multipurpose platform sized to meet endurance and range keyed to NLOS fires capabilities. Class IV UAVS will be multifunctional to provide reconnaissance, surveillance, and target acquisition (RSTA) throughout the brigade area. Key capabilities are long-range, long-endurance, communications relay; persistent stare; target acquisition and designation; and the ability to team with the Comanche to conduct reconnaissance and surveillance (R&S) for the UA.

The Army's RQ-7A provides RSTA to the tactical maneuver commander. It has an initial range of 50 km, day or night, in limited adverse weather conditions with a future objective range extension of 200 km. Each system includes three

FUTURE COMBAT SYSTEMS UAVS : 2020 AND BEYOND

System Echelon	Operational Radius	On-Station Time	Operational Altitude AGL (MSL*)
UAV Class I *Support Platoons*	8 km (T) 16 km (O)	50 min (T) 90 min (O) per vehicle	500 ft AGL (10,500 MSL)
UAV Class II *Support Companies*	16 km (T) 30 km (O)	2 hours (T) 5 hours (O)	1,000 ft AGL (11,000 ft MSL)
UAV Class III *Support Battalions*	40 km (O)	6 hours (T) 10 hours (0)	2,000 ft AGL (12,000 ft MSL)
UAV Class IV*** *Support Brigades* ****More than one type vehicle may be used to accomplish the mission sets for this action*	75 km (T) 400 km (O)** **Limited duration in support of operations moves	18-24 hours (O)	6,500 ft AGL (min) (16,000 ft MSL)

aircraft with day and night payloads, two ground stations mounted on HMMWVs, and four remote video terminals to deliver near real time video to commanders on the ground. The Shadow 200 currently has an onboard EO/infrared (IR) sensor payload. Objective payloads may include, but are not limited to advanced EO/IR, all-weather SAR and moving target indicator (MTI), and signals intelligence (SIGINT) sensors. The RQ-7A is supporting OIF units and has flown more than 575 sorties and 2,300 hours. The Army has fielded the RQ-7A to the 4th ID, 2nd ID, 3/2 ID (SBCT), and 1/25 ID (SBCT). Full-rate production began in December 2002 with the end state to field TUAVs to 41 Brigade-level units by FY09. Figure 8-3 depicts the complete Shadow 200 fielding schedule.

Hunter UAV is the interim extended-range multipurpose (ER/MP) UAV. It is the commander's RSTA and battle damage assessment asset providing near real time imagery at ranges up to 200 km. The threshold range is 300 km with an objective range of 500 km and an on-station endurance of 12 hours threshold, 24 hours objective. The threshold payload is 200 pounds of ISR/C2 and 400 pounds of weapons. The objective payload is 300 pounds of ISR/C2 and 1000 pounds of weapons. Advanced payloads will support various other missions.

Aerial Common Sensor (ACS). ACS provides the JFC with wide-area surveillance and precision targeting. ACS fills the Army's critical mission need for a worldwide self-deployable airborne reconnaissance, intelligence, surveillance, and target acquisition (RISTA) system. ACS supports early-entry and forward-deployed forces by providing timely I&W, dominant situational awareness, battle management, and precision targeting capabilities across the full spectrum of operations. These capabilities assist Army and joint commanders in the planning, preparation, and execution of assigned missions. These capabilities help commanders see first—allowing them to shape the battlespace and conduct decisive operations under conditions of their choosing.

ACS is integral to the Army's deep-strike architecture. It will survey new areas of operations

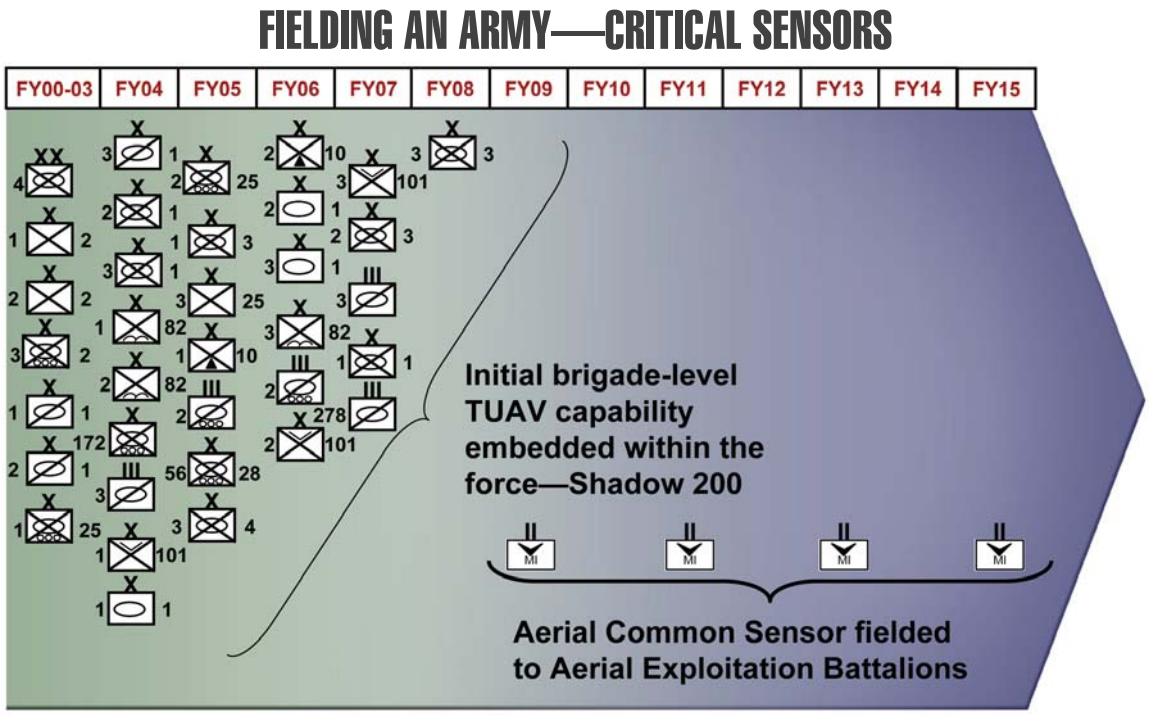


Figure 8-3. Critical Sensors Fielding Schedule

to facilitate changes to smart weapon algorithms. It will provide the dynamic precision targeting data needed by future deep-strike weapon systems and, with advances in multiple sensor packages (organic or linked), will enable on-the-spot battle damage assessment (BDA). The new ACS sensor packages will also facilitate the detection of movers, sitters, emitters and hiders—a first from any ISR sensor. Sensor payloads will include communications intelligence, electronic intelligence, and imagery intelligence and measurement and signature intelligence (MASINT) capabilities, such as EO/IR, SAR, MTI, multi- and hyperspectral imagery sensors.

ACS will be organic to the Army UA and will merge the capabilities of Guardrail Common Sensor and Airborne Reconnaissance-Low into a single, multifunction platform. This platform provides the requisite networked situational awareness and joint network-centric and deep-strike precision targeting for the Future JFC. ACS has its Milestone B decision in FY04. The Army plans to field ACS to an aerial exploitation battalion in FY09, with four additional systems fielded at a rate of one every two years. Figure 8-3 depicts the fielding schedule for TUAV and ACS.

Force Application. The ability to generate precision effects on adversaries is central to decisive Joint operations.

Stryker Family of Armored Vehicles. The Stryker Family of Armored Vehicles is the centerpiece combat and combat support platform for the SBCTs. The Stryker has two variants: the Mobile Gun System (MGS) and the Infantry Carrier Vehicle (ICV). There are 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), Antitank Guided Missile (ATGM) Vehicle, and Nuclear, Biological and Chemical Reconnaissance Vehicle (NBCRV). Stryker brings the following capabilities to the Joint Force:

- Strategically responsive and deployable on the U.S. Air Force family of tactical aircraft
- Immediately employable through roll-on/roll-off combat capable with minimum preparation
- Superior situational awareness with Internetted communications
- Enhanced survivability by all around 14.5mm armor piercing and 152mm artillery airburst protection (add-on armor provides protection against rocket-propelled grenades (RPG) antitank weapons)
- Accurate target acquisition with Long Range Advanced Scout Surveillance System (LRAS3) mission package
- Accurate target engagement with Remote Weapon Station (Mk 19 grenade launcher and M2 .50 caliber machine gun)
- Decisive offensive action with dismounted infantry assault (ICV)
- Bunker-busting capability with 105mm cannon (MGS) for roles in immediate fire support of dismounted infantry operations
- Responsive indirect fires with 120mm mortar (MC)
- Antitank capability with TOW 2B (ATGM) and Javelin-equipped dismounted infantry (ICV)
- Enhanced 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. SBCTs fill an immediate capabilities gap in the Current Force. Supporting Stryker fielding is a complete new equipment training package for both operators and maintainers provided at home station. The Army plans to procure 2,121 total vehicles.

Stryker Brigade Combat Teams. The Army has fielded its first truly network-centric force, the SBCT. The SBCT is a combined arms force in both design and manner of deployment and

employment. It is fully integrated within a JTF; Stryker Brigades deploy rapidly, execute early entry, and conduct effective combat operations upon arrival. The first Stryker Brigade, 3/2 ID, has deployed in support of OIF. The second and third SBCTs are currently organizing and training. The Army will field six total SBCTs by the end of this decade—the AC will have five SBCTs by 2007 and the RC will achieve operational capability of its SBCT in 2010. The SBCTs will increase the deterrence options available to JFCs, increase rapid strategic response from power projection platforms, and inform development of the Future Force.

The Army has fully funded the Stryker program to field six SBCTs. Figure 8-4 illustrates the SBCT fielding plan and the selected units converting to SBCT design. The Army plans to integrate proven new capabilities to SBCTs in line with its Current to Future Force framework to enhance the Current Force.

Future Combat Systems (FCS). FCS is the networked system of systems that serves as the core building block within modular maneuver echelons to develop overmatching combat power, sustainability, agility, lethality, and versatility. FCS-equipped UAs are capable of full-spectrum operations against the full range of threats in any operating environment and in all weather and terrain. The FCS-equipped force enables the Future Force to see first, understand first, act first and finish decisively.

FCS-equipped UAs provide the Joint Force the overmatching combat power, sustainability, agility, and versatility necessary for full-spectrum military operations. FCS-equipped UAs allow Soldiers to operate as a coordinated part of a distributed, networked force. FCS provide the capabilities for the Joint Force to perform a wide range of military activities and operations, from small-scale contingencies to stability and support operations to MCO. FCS operates as part of an overwhelmingly lethal, strategically deployable, self-sustaining, and survivable combat force. FCS leverages advanced technologies with the capability to rapidly incorporate future advances through a deliberate technology insertion and integration program. FCS provides a secure command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) system to harness advances in the distribution and effective use of information power as part of the Joint Battle Management Command and Control network. FCS provides networked lethal direct fire, indi-

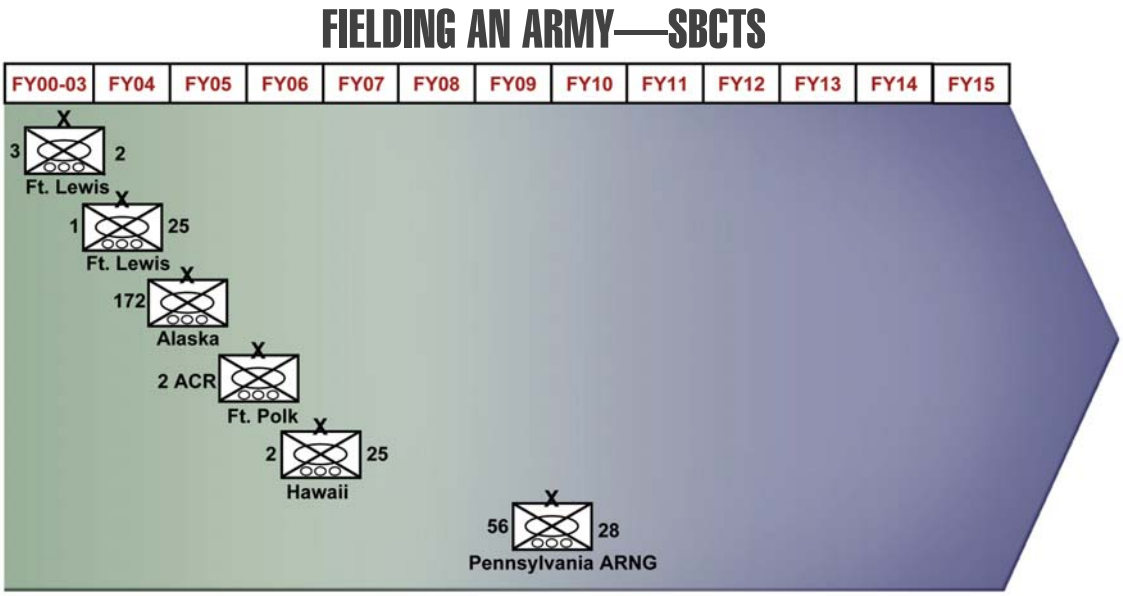


Figure 8-4. SBCT Fielding Schedule

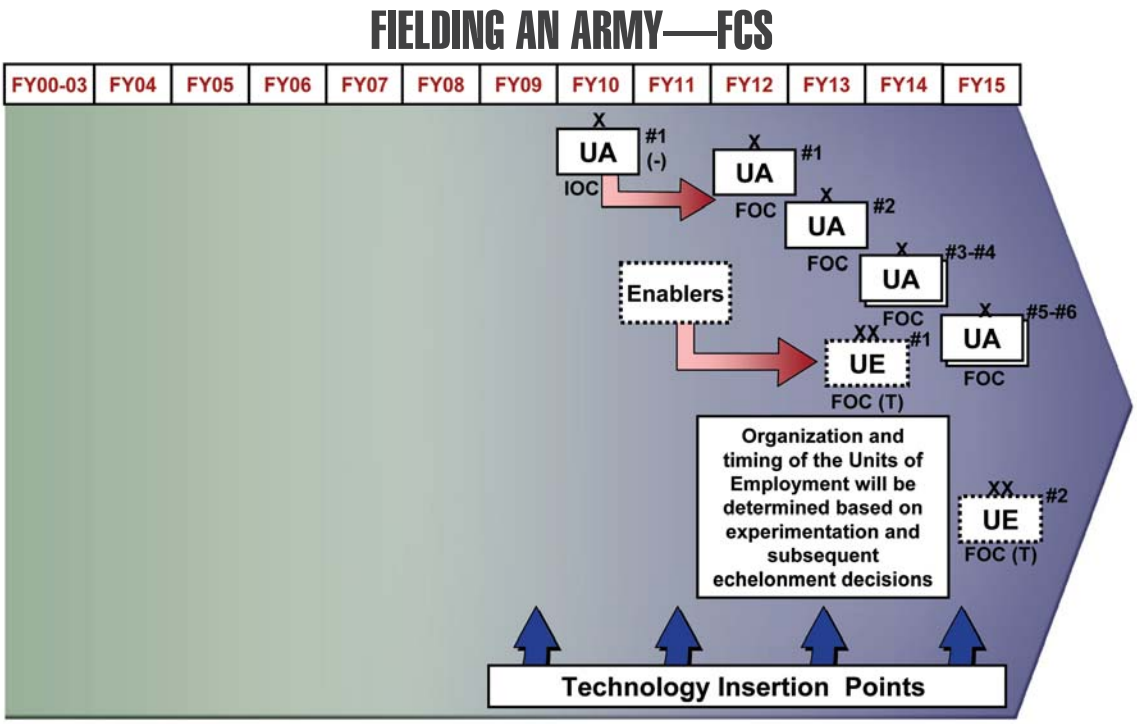


Figure 8-5. FCS-equipped UA Fielding Schedule

rect fire, air defense, complementary nonlethal fires and effects, and troop transport capability.

FCS consists of the network plus 18 manned and unmanned air and ground systems. FCS successfully passed its Increment 1 Milestone B in May 2003. The Army plans to achieve IOC within one combined arms battalion by 2010, expanding to a full operational capability (FOC) UA in FY12. The Army will obtain IOC in another FCS-equipped UA in the following fiscal year, ramping up to two UAs in subsequent years. Figure 8-5 details the fielding schedule for FCS-equipped UAs.

Comanche. The Comanche (RAH-66) is the Army's next generation helicopter, designed to perform armed reconnaissance and attack missions. The Comanche significantly expands the JFC's ability to conduct reconnaissance, security, and mobile strike operations in all battlefield environments, day or night, and during adverse weather conditions. Its advanced EO sensors, aided-target recognition, and sensor-weapons integration allow it to engage enemy targets with multiple organic and joint fire options. As a manned aircraft, Comanche provides the situational curiosity and judgment that UAVs and other unmanned sensors do not possess.

In addition, the Comanche, having been designed to leverage multiple internal and external sensors and weapons, is the first helicopter capable of network-centric operations. Comanche acts as a digital quarterback to harness and direct all joint strike capabilities on future battlefields. Supportability features include embedded diagnostics, minimal special tools, reduced support equipment, and fewer parts. These features reduce the logistics footprint of Comanche. The Army will begin fielding the Comanche in FY09 to the first UA. The Army will incorporate Comanche as an enhancement to the fifth SBCT, followed by elements in selected forcible entry divisions—the 82nd Airborne and the 101st Air Assault—as well as subsequent UAs and UEs. Figure 8-6 shows the Comanche fielding schedule.

Advanced Lift Capabilities. Extensive analysis and wargaming have shown that cur-

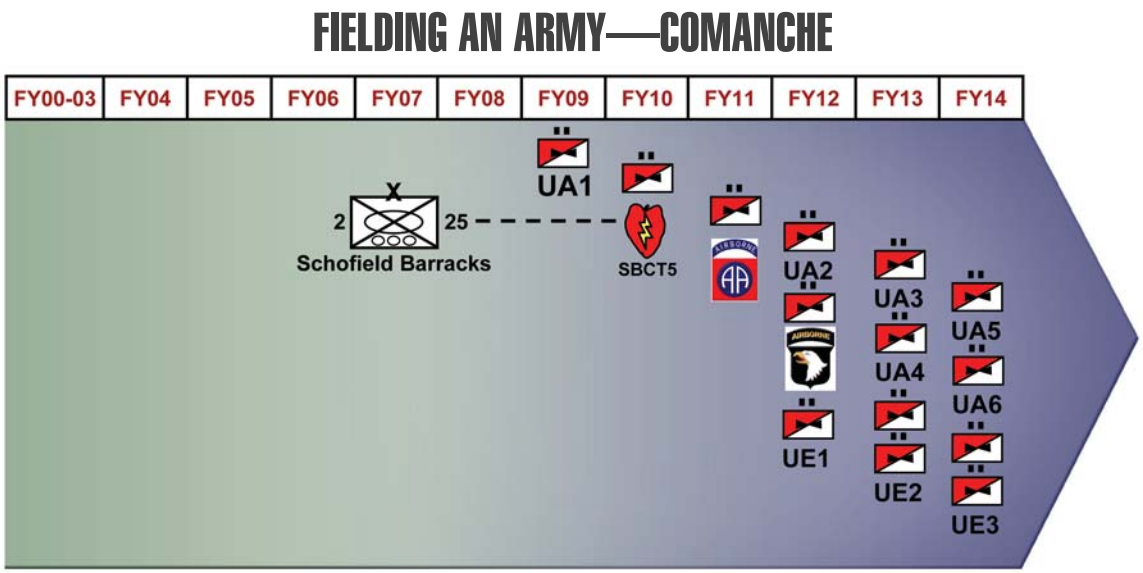


Figure 8-6. Comanche Fielding Schedule

rent and many planned strategic and intra-theater air- and sealift platforms do not support the JOCs. Many current sealift platforms require deep-water ports to berth and off load. The lack of such ports in future joint operational environments enhances adversaries' anti-access measures and jeopardizes the deployment of the Joint Force. Advanced sealift capabilities for brown water and over-the-horizon (OTH) sealift are critical to support efforts designed to defeat anti-access and area-denial methods. Shallow-draft high-speed ships use numerous ports in all areas of the world and support the concept of multiple, parallel seaports of debarkation (SPODs)—fundamental in overcoming anti-access challenges.

Existing strategic air platforms such as the C-5 Galaxy carry enormous loads, but depend on world-class airports for both embarkation and debarkation. The C-17 and C-130 provide the only capability today of bypassing major choke points from appreciable distances while maximizing load capacities. Even so, they still require at least a 3,000-foot runway and in many cases (weather, terrain, and environment dependent) may require larger runways when carrying sizeable loads. The venerable C-130 has significant payload, altitude, and range limitations and cannot refuel in air. These capability limitations not only severely constrain the Joint Force's ability to execute assured access strategies, but also demand a nearby intermediate staging base to transload equipment, personnel and sustainment from inter- to intra-theater lift 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 current systems, larger capacity SSTOL and HLVTOL platforms are necessary in substantial quantities for air movement of Future Forces. Similarly, SDHSS and Theater Support Vessel (TSV) platforms are necessary for sea movement of future forces to meet the needs of the Joint Force.

The SSTOL is a joint aircraft concept 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. This capability avoids fixed airfields and adds innumerable points of entry. SSTOL provides the JFC the ability to achieve operational surprise.

The HLVTOL is an aircraft concept with the ability to deliver one FCS within a radius of 1,000 miles. The ability to insert combat vehicles vertically gives the JFC unparalleled speed and

agility. Generally independent of ground conditions, HLVTOL enables the JFC to exploit vertical envelopment and 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.

The SDHSS is a strategic ship that delivers troops, equipment, and sustainment together in sufficient size and at a considerable speed to provide immediate combat power to the JFC. Because of the shallow draft feature, SDHSS can bypass established seaports and discharge its combat power wherever there is at least a 10-foot draft and an acceptable offload site. With a C4I suite onboard, commanders can conduct en route planning, receive intelligence updates, and coordinate effects with the Joint Force.

The TSV is the operational version of the strategic SDHSS. The TSV is a high-speed, 40+ knots, shallow draft sealift platform that maximizes COTS ferry technology currently in use in civilian markets. The TSV provides the capability to conduct operational maneuver and repositioning of intact unit sets while conducting en route mission planning and rehearsal (EMPR). This intra-theater vessel provides the JFC with increased throughput, survivability, and enhanced responsiveness through faster closure rates. It enables the JFC to insert combat power and sustainment into austere ports worldwide. Supporting Army pre-positioning stocks and Joint Logistics Over the Shore (JLOTS), the TSV expands the reach and capabilities of both land-based and afloat pre-positioning. This transport transformation enabler helps obtain Future Force deployment goals as well as achieving full distribution-based logistics. The Army is leasing two vessels for testing purposes. The Army is sharing the first vessel, Joint Venture, HSV-X1, with the Navy. The second vessel, Spearhead, TSV-1X, is an ACTD vessel and will perform test and evaluation activities in support of Current Force operations.

Whether the goals encompass operational maneuver from strategic distances, multiple simultaneous austere points of entry, vertical maneuver and envelopment, or focused logistics, the Joint Force needs advanced air- and sealift solutions sooner rather than later. These platforms provide a quality of versatility and adaptability necessary to enable the JFC to maintain operational momentum in response to the evolution of a campaign and the enemy's 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 and procurement emphasis in advanced lift capabilities.

The goals of Army deployment are to "project and sustain U.S. forces in distant anti-access or area-denial environments and defeat anti-access and area-denial threats"—one of DOD's critical operational goals. The Army is working several initiatives to support this goal. Significant investments in power projection infrastructure support rapid deployment of Current and Future Joint Forces. Additionally, the Army is conducting annual deployment readiness exercises to validate this infrastructure at SBCT locations. The Army is revising its Battle Command Training Program to meet more realistic planning and execution scenarios to better train division and corps staffs in the deployment process.

The Army is working within the joint community to achieve improvements in joint deployment automation and decision aids, in-transit visibility, and data management. Within this array, the Army is fielding the Transportation Coordinators' Automated Information for Movement System II (TC-AIMS II) and Joint Force Requirements Generator II (JFRG II). TC-AIMS II serves as the "sourcing" system and JFRG II serves as the feeder system to JOPES. The Army will field JFRG II as the standard unit movement system.

TC-AIMS II establishes the baseline for the deployment infrastructure needed to meet Future Force deployment objectives. The Army has

Service lead for the development of this joint system that addresses critical shortfalls in the movement of materiel and personnel. CJCSI 3020.01 directs the Services to field TC-AIMS II to their early deploying units by the end of FY03. TC-AIMS II merges the best business practices of the current Service-unique transportation automated information systems into a single system that combines the requirements for Unit Movement, Installation Transportation Office/Transportation Management Office, and Theater Distribution functional areas as well as integrating several existing systems from each of the four Services. TC-AIMS II improves joint capabilities for rapid worldwide deployment and redeployment, and enables individual units the autonomous capability to conduct rapid crisis response at UA level. Each battalion and separate company will receive training on TC-AIMS II and a complete suite of computer hardware.

The TC-AIMS II program has seven blocks of requirements that support a spiral software development strategy. The Army has fielded TC-AIMS II to U.S. Army European Command (USAREUR) and is currently fielding U.S. Army Forces Command (FORSCOM) and the U.S. Navy. All Services will receive TC-AIMS II by FY09.

The Army Pre-positioned Stocks Evolution (PREPO) program is transforming to support reconstitution of the force after OIF to execute the concept for the ARF. Support to the warfighter continues as the Army Watercraft Repositioning Program forward stations and prepositions watercraft assets to improve responsiveness for the combatant commanders.

The Precision, Extended Glide Airdrop System (PEGASYS) is a high-altitude-capable, autonomously operated precision airdrop system. The system consists of a family of differently sized airfoils, allowing airdrop of weight categories up to approximately 42,000 lbs. PEGASYS is not totally wind dependent and is releasable from altitudes up to 35,000 feet above mean sea level. Based upon winds and release altitude, 50 km standoff distances are also possible. Space-based global positioning systems (GPS) technology provides for aerial navigation throughout descent and permits highly accurate ground touchdown locations. PEGASYS is a critical Logistics Transformation enabler that facilitates dedicated aerial sustainment and helps achieve full distribution-based logistics. The PEGASYS ACTD will procure three to five each of the candidate prototypes for use in the operational demonstration and mature them to a level suitable for operational use.

Enable Theater Access (ETA) is an imperative that develops Army warfighting capabilities to gain theater access for deployment of joint forces through multiple austere A/SPODs. ETA has two components: Joint Rapid Airfield Construction (JRAC) and Rapid Port Enhancement (RPE).

JRAC capability increases the maximum on ground capacity of austere airfields, thereby reducing force closure time for aerial delivery of warfighting combat power. The S&T special technical operations (STO) effort is on schedule. In FY03, test sections evaluated site assessment, enhanced construction, and soil stabilization technologies. In FY04, the Army plans for a major C-130 airfield demonstration. RPE optimizes inter- and intra-theater sealift throughput at SPODs. Currently, the Army is funding the hydrobeam causeway as a 6.2 STO with $11M to maximize TSV utility.

Precision Munitions. The Army has a number of precision munitions programs that provide future JFCs with dominance in applying lethal effects with unprecedented accuracy and control. The Army is upgrading some of the precision munitions within the Current Force to increase their utility, deployability, sustainability, and accuracy. Army Tactical Missile System (ATACMS) and Guided Multiple Launch Rocket System (GMLRS) represent improvements to current systems.

ATACMS missiles are one of the JFC's all-weather, responsive, deep-strike weapons. The

Army develops these missiles in a logical series of improvements to range, accuracy, and lethality. Missile production funds a small number of ATACMS-Unitary missiles. The Army is restructuring the ATACMS program. The FY04-09 Plan terminates Block II/Brilliant Anti-Armor Technology (BAT) procurement and funds a small number of ATACMS-Unitary missiles. An Army/Navy ACTD is demonstrating an ATACMS-Penetrator variant.

GMLRS provides commanders with a precision munitions capability to ranges of 15-70 km. GMLRS is a major upgrade to the M26 series MLRS rocket with the objective of integrating a GPS-aided guidance and control (G&C) package and a new rocket motor to achieve greater range and precision accuracy. The improvement in accuracy (<3Mil CEP) reduces the number of rockets required to defeat targets, limits collateral damage, and directly contributes to the Joint Force achieving precision effects with a smaller logistical footprint. GMLRS system development and demonstration (SDD) is an international program with the United Kingdom, Germany, France and Italy. There is a RDT&E 50/50 cost-share agreement between the United States and European partners. The United States is managing the prime contract. The Army plans to field an IOC in FY06. GMLRS-Unitary is a low-collateral-damage rocket, capable of destroying high-payoff surface targets in complex and urban terrain with pinpoint accuracy. GMLRS-Unitary began a spiral SDD in FY03.

High Mobility Artillery Rocket (HIMARS). HIMARS provides early-entry Current and Future Forces with precision rocket and missile fires to a depth of 300 km. Mounted on a Family of Medium Tactical Vehicles (FMTV), HIMARS is C-130-transportable. It provides full MLRS family of munitions capability, yet requires 70 percent fewer airlift resources to transport a battery than the current M270 MLRS launchers. HIMARS is in engineering and manufacturing development (EMD). The Army plans to equip its first unit in FY05.

Lightweight 155 Howitzer (M777). An advanced, towed lightweight 155mm howitzer that meets increased operational thresholds for mobility, survivability, deployability and sustainability provides the Joint Force accurate, reliable, and responsive fires. The M777 Lightweight 155mm Howitzer satisfies this requirement. A joint Marine Corps/Army program, the M777 delivers on-demand, 24-hour, all-weather, all-terrain, close-supporting fires to maneuver forces. The LW155 weighs 40 percent less than the current howitzer. Due to an integrated digital fire control system, it can fire in one-quarter of the time. On 8 November 2002, the M777 entered low-rate initial production (LRIP) for 94 USMC Howitzers for delivery in FY03 and FY04. The FY04-09 Plan funds the procurement and fielding of this system to selected Army units, including the SBCTs.

Excalibur. Excalibur is a cannon-delivered precision engagement, extended range artillery projectile that self-guides to a programmed aimpoint. Target and fuse data programmed into the projectile via an inductive programmer allow precise target engagement throughout its range band. Munitions are unitary, smart and discriminating. Excalibur eliminates the shortcomings of current area engagement munitions with greater precision, increased range and lethality, and reduced collateral damage. The Army is currently restructuring the SDD contract.

120mm XM395 Precision Guided Mortar Munition (PGMM). PGMM is a 120mm precision (laser-guided) mortar munition, designed to defeat high-payoff targets at extended ranges. PGMM is the maneuver commander's "hip pocket" precision indirect fire weapon capable of providing responsive, standoff defeat of high-value targets. PGMM is in component advanced development (CAD). The Army plans to begin production in FY07 and field in FY08.

Protection. Joint forces must possess the capabilities to conduct decisive operations despite their adversaries' use of a wide range of weapons (including WMD), the conduct of

information operations (IO), terrorist attacks, or the presence of asymmetric threats during any phase of these operations. The Joint Force must protect personnel and other military and nonmilitary assets needed for conducting successful operations regardless of location.

Soldier Modernization. The Army's primary Soldier modernization concept is Soldier as a System (SaaS). SaaS provides all Soldiers with superior capabilities to accomplish assigned tasks or conduct missions against any opponent. SaaS includes a full DOTMLPF approach to resolve issues and enable Soldiers to do their jobs more efficiently and effectively. The SaaS concept will be the impetus for the alignment of Soldier systems management processes to aid in the establishment of fully integrated DOTLMPF Soldier requirements in support of the Soldier system architecture. It will establish a management structure and process to ensure the full integration of the Soldier in Current and Future Force O&O concepts. The SaaS objectives include improving lethality, survivability, command and control, mobility, and sustainment of the individual Soldier.

The Army's primary equipment system for networking the individual Soldier is the Land Warrior (LW) system. LW is an integrated Soldier fighting system. It enhances the lethality, battle-command compatibility, survivability, mobility, and sustainability of dismounted combat Soldiers, enabling them to engage and defeat enemy targets while minimizing friendly casualties. LW facilitates command, control, and sharing of battlefield information and integrates each Soldier into the digitized battlefield. The system incorporates communications, sensors, and power to improve capabilities without increasing the Soldier load.

LW components include a modular weapon system with thermal weapon sight, multifunctional laser with digital compass, video camera, and close combat optic; integrated headgear with helmet-mounted display and image intensifier; enhancements to protective clothing and individual equipment; and integrated individual Soldier computer/radio/GPS. The systems approach optimizes and integrates these capabilities, to include interface with the Army Tactical Internet. These components come together into a system to support the mission of the dismounted combat Soldier. The Army is already spiraling elements of LW, such as the interceptor body armor, into the Current Force.

Land Warrior Block II focuses on a dismounted/mounted interface to fully synchronize combined arms operations. The Army will insert advanced technology components in areas such as enhanced navigation, system voice control, weight reduction, digital connectivity, and power to meet Future Force requirements.

The Land Warrior program has entered developmental testing (DT). The Army expects to complete operational testing (OT) by the end of FY03. The current system is in compliance with all key performance parameters (KPP) for the LW initial capability (IC) increment. Fielding of the LW-Stryker interoperable capability increment will follow. In addition to Stryker connectivity and integration, LW-Stryker upgrades include combat identification, weight reduction, and increased power duration. The Future Force Warrior S&T program will develop technologies that will transition to the Land Warrior advanced capability development.

Countermine (CM). The countermine program provides assured and rapid surveillance, reconnaissance, detection, and neutralization of mines. The Ground Standoff Mine Detection System (GSTAMIDS) delivers a near-term capability to execute the on-route CM mission. Other systems in the program include the Handheld Standoff Minefield Detection System (HSTAMIDS), RDT&E for mine detection and neutralization, and a robotic combat support system.

Air and Missile Defense (AMD) Systems. AMD provides protection of critical bases—Army and joint—across the spectrum of operations. AMD capabilities in Current and

Future Forces execute a wide variety of overlapping offensive, defensive, stability, and support operations conducted simultaneously across the tactical, operational, and strategic levels of warfare. AMD modernization is on track to provide a multitiered capability able to defeat a significant and advancing threat. The Army is investing current resources on those capabilities that are time critical and provide the greatest benefits to the current Joint Force. To ensure effective balance, AMD modernization and transformation remains closely synchronized with other JTAMD elements to provide effective support for the Joint Forces.

The Army is modernizing some of its existing systems to enhance the capabilities of the Current Force. Patriot is a corps and echelon above corps (EAC) AMD system that can simultaneously engage and destroy multiple targets at varying ranges and altitudes. It is the world's only battle-proven theater missile defense (TMD) system. The upgraded Patriot Advanced Capability-3 (PAC-3) provides remote launch capability, increases range, altitude, and firepower with the PAC-3 hit-to-kill missile, and engages multiple maneuvering and nonmaneuvering TBM, air-breathing threat (ABT) and cruise missile threats. The PAC-3 missile is in LRIP. The PAC-3 completed operational test and evaluation (OT&E) in 3QFY02 and received a successful full-rate production decision in FY03.

PAC-3 Ground Support Equipment (GSE) upgrades are in procurement. Upgrades include the addition of medium- and high-range resolution waveforms, a dual traveling wave tube, and a new exciter to the radar. Other upgrades enhance the battalion's communication equipment and the ability to remotely locate launchers up to 30 km from the radar. These changes improve search, detection, track, and discrimination by the radar, increase battlespace awareness, and improve command and control. Patriot PAC-3 system upgrades to counter evolving threats, improve joint interoperability, and increase surveillance and detection capabilities are part of the evolutionary development.

Patriot will remain a key element of AMD for another 25 years. The Army addresses this requirement by funding the upgrade and modernization of Patriot PAC-2 Configuration two units to Patriot PAC-3 Configuration three units and funding Patriot recapitalization efforts. Because replacement systems will not emerge for at least 10 years, the Army will maintain the operational capability of the system through the Patriot Recapitalization Program. This program brings existing Patriot assets to a "like new" (zero miles, zero hours) state.

Currently, the Army only has the resources to upgrade eight of 10 AC Patriot battalions to PAC-3 Configuration three, allowing for a force of significantly different capabilities. Additionally, the PAC-3 missile inventory shortfall is a challenge. The Army's Acquisition Objective (AAO) is 2,200 PAC-3 missiles. However, there are funds for only 1,234 even though the Joint Theater Air and Missile Defense Organization (JTAMDO) missile inventory analysis pushes the PAC-3 missile requirement above 3,200.

Medium Extended Air Defense System (MEADS) is an international cooperative effort between the United States, Germany and Italy. OSD and the Army have designated it as a "clearly transformational" system. MEADS is a corps and EAC AMD system. It offers a significant improvement in tactical mobility and strategic deployability since it requires 50 percent less airlift than Patriot and is transportable intra-theater with C-130s and helicopters. MEADS provides continuous coverage alone or can couple with short-range air defense (SHORAD) systems in the corps and division area. It uses a netted and distributed architecture with modular, configurable battle elements. These attributes allow it to integrate with other airborne and ground-based sensors to provide a robust, 360-degree defense.

Beginning in FY04, the Patriot PAC-3 and MEADS programs merged to capitalize on the

resources available to both programs. This combined program provides for the spiral development and incremental fielding of MEADS major end items (MEI). This incremental fielding approach reduces sustainment costs while delivering increased AMD capability across the force earlier. This approach offers the most efficient use of valuable resources by eliminating dual development and sustainment efforts while giving maximum flexibility in regard to funding and changing warfighter needs. Current planning calls for the introduction of the objective launcher and Battle Management Command, Control (BMC4I) capabilities in FY09. The complete transformation of Patriot would begin with the introduction of the ground-based sensors in FY15.

Another of the Army's near-term AMD efforts centers on fielding of the GMD. GMD is a fixed, land-based system designed to provide limited protection to the United States against a ballistic missile attack. GMD system design focuses on ensuring high defense effectiveness against ballistic missile attacks of limited scope in a single operational configuration. The GMD architecture includes the following system elements: GMD Battle Management Command, Control and Communications (GBMC3), Upgraded Early Warning Radar (UEWR), In-Flight Interceptor Communications System (IFICS), Defense Support Program (DSP)/Space-based Infrared System (SBIRS), Ground-based Interceptors (GBI) and X-Band Radars (XBR). The Army has served as lead Service for GMD since 1999. On 16 December 2002, Presidential Directive 23 changed the program focus to the deployment of a continuous GMD operational capability by 1 October 2004 with a secondary and noninterfering mission as a test bed.

AMD units in the Future Force enhance full-spectrum joint operations with special-purpose capabilities and advanced strategic responsiveness to dominate, control, and exploit the joint aerial battlespace. Protection of the Joint Force encompasses the tactical, operational, and strategic levels of warfare. At all levels, AMD capabilities enable the Joint Force to see first, understand first, act first and finish decisively. The Army's long-term developmental AMD efforts focus on the fielding of the MEADS as a replacement to the Patriot missile system, the Theater High Altitude Area Defense (THAAD), the JLENS, and the Mobile Tactical High Energy Laser (MTHEL).

JLENS is a theater-based system using advanced sensor and networking technologies to provide wide-area surveillance and precision tracking of land attack cruise missiles. JLENS is a joint program with the Army as the lead organization. As a key element of the Single Integrated Air Picture (SIAP), JLENS integrates data from multiple sensors and C3I networks and provides correlated data to BMC4I nodes. JLENS consists of surveillance and fire control radars. JLENS provides OTH surveillance and precision track for broad area defense against land attack cruise missiles and low-flying threats. It also functions as a multipurpose aerial platform to enable extended range C2 linkages. 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. The program is currently in the concept and technology development phase of its life cycle.

Sentinal Radar consists of a radar- based sensor system with its prime mover, IFF, and Forward Area Air Defense (FAAD) command, control, and intelligence (C2I) Interfaces. The Sentinel Modernization Enhanced Target Range and Classification (ETRAC) plan is a material enhancement of the Sentinel system.

The system provides current forward area SHORAD systems and the future Surface Launched Advanced Middle Range Air to Air Missile (SLAMRAAM) system with information dominance via a digital air picture for support of joint maneuver forces and critical assets. The data acquired and processed by the system gives the commander an integrated battle-

field picture and cueing and target identification information for SHORAD assets. The Sentinel Modernization program adds the capability to detect and classify small radar cross-section targets, such as cruise missiles and UAVs.

To engage at ranges beyond visual range, the SHORAD system must detect and track the target at sufficient range to alert and then cue the gunner to the target. The Sentinel modernization efforts extend the range of Sentinel. Gunners will receive cues with sufficient time to engage targets at ranges beyond visual range. Cueing alone, however, is not sufficient to support an engagement. Soldiers must identify the target as an engageable target based on the rules of engagement (ROE) and requirement of the defended assets. The modernization program allows Sentinel to determine aircraft type and supports manned versus unmanned determinations to facilitate precision engagements beyond visual range.

MTHEL is a combined U.S. and Israeli program to develop a mobile High Energy Laser (HEL) weapon system prototype capable of acquiring, tracking, engaging, negating and destroying short-range ballistic missiles (SRBM), rocket, artillery and mortar (RAM) threats, UAVs, cruise missiles, and air-to-surface munitions. In the near term, MTHEL uses deuterium fluoride (DF) chemical laser technologies to provide cost-effective kills while the solid-state laser technologies mature. The MTHEL system will integrate into existing air defense architectures. The current plan funds the development of system technical requirements, extended lethality testing, and risk reduction. The program will then enter a SDD-like phase to design, fabricate, integrate, and test two prototypes by FY07.

THAAD defends against short- and medium-range ballistic missiles at long ranges both inside and outside the atmosphere. THAAD protects largely dispersed U.S. and coalition forces and assets on a wide-area basis. THAAD's capability to intercept at both endo- and exo-atmospheric altitudes makes effective countermeasures against THAAD difficult. THAAD's integration with lower tier systems allows multiple intercept opportunities and significantly mitigates the effects of unitary and submunitions. The weapon system consists of five major components (missiles, launchers, radar(s), Battle Management/ Command and Control (BM/C2), and THAAD-specific support equipment). THAAD is in RDT&E development phase under the Missile Defense Agency (MDA). Flight testing begins in FY04. THAAD will transition from the MDA to the Army in FY06-07.

Focused Logistics. Focused logistics ensures delivery of mission-ready personnel, required equipment, agile sustainment and essential support in the right quantities, to the right place and at the right time.

Joint and Expeditionary Logistics. Joint and expeditionary operations necessitate joint and expeditionary sustainment. Multiple and simultaneous operations over extended distances in a distributed battlespace requires synchronization of all CSS assets from strategic national providers down to forward units at the tactical level. Sustainment must integrate a joint end-to-end distribution-based system with a single provider (authorized, responsible and resourced) at each level that can most effectively and efficiently provide support to the combatant and component commanders across the full spectrum of operations in a joint, interagency and multinational, and deployed, employ and sustain (DES) environment.

At the strategic level, there is no single joint manager for defense logistics or the logistics network. This fragmentation of sustainment causes duplication of effort, competing demands, and uncoordinated support. National providers and Service-centric logistics organizations must fully integrate and fuse under one joint logistics command (JLC) to synchronize and prioritize all national assets to enable effective joint logistics operations. This organization will not relieve the Services of their Title 10 responsibilities or

the regional combatant commanders of their directive authority for logistics.

Similarly, at the operational level there must be a single joint logistics regional command supporting the geographic combatant commander. This organization must draw from Service component organizations and staffs in addition to component specific support elements. The forming of a Joint Regional Support Command (JRSC) provides centralized distribution management with a single joint logistics commander bridging the strategic to the theater operational-level support for a combatant commander. Currently, no organization meets this need.

The JRSC will have subordinate joint-capable support commands (JSCs) from the Army that are modular, flexible, and expeditionary in nature. The JSCs by design rapidly deploy to an area of operations in support of a Joint Task Force (JTF). The JSC will provide critical effects-based logistics support bridging the gap of the operational to tactical level of support.

To best support combatant commanders, logistics must be a seamless, joint and expeditionary system. This paradigm shift requires a cultural change within all DOD components and agencies. This change includes the removal of Service and DOD agency seams, fusion of logistical capabilities, and establishment of clear lines of command and control throughout the DOD distribution network.

Logistics Programs. The goal of Army logistics support is the continuous, precise, and assured provisioning of deployed forces in any environment. Transformation in logistics ensures the ability of the JFC to generate, maintain, and employ dominant land power capability at every point in the campaign. The Army relies on the concept of DBL to achieve this goal. The key principles underlying DBL include: velocity over mass, multinodal and multimodal execution, centralized management with decentralized execution, maximum throughput, minimum essential stockpiling, seamless two-way flow of resources, in-transit visibility of stocks and supplies, unit- and mission-configured loads, real-time CSS situational understanding to enable anticipatory logistics, and time-definite delivery. The Army has several programs underway that support Logistics Transformation for the Current Force and developmental programs that support the Future Force.

The following programs support the Current Force: Battle Command Sustainment Support System (BCS3), Movement Tracking System (MTS), Medical Communications for Combat Casualty Care (MC4), Common Logistics Operating Environment (CLOE), and Satellite Communications for Support Activities. BCS3 provides the sustainment capability for the Army Battle Command System. It builds on the Logistics Common Operational Picture (LCOP) capability fielded during OIF as an interim solution. BCS3 provides the commander with the capability for combat power estimates, Blue Force Tracking, in-transit asset visibility, decision support tools and collaborative planning.

MTS is a critical Logistics Transformation enabler that allows in-transit visibility (ITV) of all theater common user transportation assets for the Joint Logistics Corporate Enterprise (JLCE) and enables DBL. MTS provides in-transit asset visibility and situational awareness that enables maneuver sustainment operations. MTS is a satellite-based tracking and communications system consisting of mobile unit transceivers, system control stations, GPSs, common operating software and MTS unique software. Fielding began with III Corps in 2001. Fielding will continue through 2022 at current funding levels.

MC4 is a family of COTS technology used to link healthcare providers, medical diagnostic systems and C2 systems at all echelons. MC4 provides decision-making healthcare information associated with medical C2, situational awareness, treatment, medical logistics, casualty movement, and healthcare delivery. Satellite Communications for Support Activities is an immediate and interim solution to assure con-

nectivity for logisticians. The priority is to field satellite terminals at every supply support activity and hospital. This capability affords logisticians the flexibility to see requirements in near real time, without relying on LOS communications.

The Common Logistics Operating Environment (CLOE) is the implementation of the Army's vision for developing a technology-enabled force equipped with self-diagnosing equipment platforms that interact with a networked sustainment infrastructure. The CLOE program works with all Army staffs, agencies and programs to synchronize sustainment doctrine and technology in implementing condition-based maintenance and anticipatory logistics. It also ensures sustainment system and platform interoperability across the Current and Future Forces. These operations include the synchronization of evolving doctrine and technology, integration of technology across commodities, and platform, communications and logistics to accomplish self-reporting, self-diagnosing platforms linked to a networked sustainment environment. Commonality is a key part of the CLOE operations in identifying, establishing, and providing recommendations on common standards, specifications, and protocols for use by program managers and enterprise integration data management.

The following programs provide Future Force transformational logistics capabilities: the Army Logistics Enterprise [comprised of Global Combat Service Support-Army (GCSS-A), Product Life Cycle Management Plus (PLM+), and the Logistics Modernization Program (LMP)]; TSV; and the Future Tactical Truck System (FTTS). The Force Application section of this chapter highlighted the capabilities of TSV. Its support to JLOTS and pre-positioning highlights TSV's contribution to Logistics Transformation.

The Army Logistics Enterprise (ALE) is the Army's primary enabler for CSS transformation and supports the functions of manning, arming, fixing, fueling, moving and sustaining of Soldiers and their systems. It is a primary Army logistical enabler supporting the Future Force sustainment strategy of the JLCE, DBL, PBL, and demand reduction. It is a commercial Enterprise Resource Planning (ERP) system implemented to integrate the Logistics Modernization Program (LMP), GCSS-A, PLM+, and all other components of the logistics portfolio. ALE will allow the Army to provide a seamless enterprise-wide logistics environment to the combatant commander, spanning factory to foxhole.

ALE provides the logistics input to the COP and features centralized management, a collaborative planning environment, a single authoritative data source, improved forecasting ability, total asset visibility, enhanced decision support capability, enterprise-wide maintenance data, and near real time logistics readiness information. Improved software achieves CSS integration currently lacking in the Army's present business systems and processes. For example, the GCSS-A will receive direct data feeds from the weapon systems and platforms based on the CLOE standards and FCS for management and delivery of CSS over the extended battlespace. This capability enables optimized combat power development.

PLM+ is a primary logistics enabler for Army Future Force network-centricity and establishes an Army single Master Data Management (MDM) virtual repository within the total enterprise architecture, which will support Army and Joint interdependence functions. The PLM contains the product life-cycle management business processes and technical data that will be configured based on Army logistics needs and is the tool for managing these end-to-end business processes. The PLM is a special access program (SAP)-preconfigured set of end-to-end business processes that flows across all levels of the logistics Army and also interacts with the weapon system Original Equipment Manufacturers (OEMs). The implementation of PLM+ is a critical component of the Army architecture

mandated by DOD that aligns the Army with the tenets of the Business Management Modernization Program (BMMP) and the Future Logistics Enterprise (FLE) as set forth by the Secretary of Defense (SECDEF) and the Deputy Undersecretary of Defense for Logistics.

The FTTS is the distribution platform for the Future Force. It incorporates technology improvements in the area of smart distribution, fuel efficiency, reliability, situational awareness, and force protection to provide the commander a maneuver sustainment platform capable of meeting the demands of the UA in the Future Force.

FACILITIES

Installations play a vital role for the transformed Joint Force. As the Army's flagships, they are essential in the development and sustainment of operational capabilities and readiness for the Joint Force. Deployment infrastructure at installations provides the strategic foundation for rapid force projection in support of JFCs. Installations extend from home station across the battlespace to seamlessly support the Joint Force. Installations enable mission accomplishment by providing information hubs, power projection platforms, combat preparation and sustainment bases, force protection, and family support.

Recognizing the requirement to enhance support to commanders, the Secretary of the Army directed the reorganization of the Army's management structure. On 1 October 2002, the Army placed the management of Army installations under the Installation Management Agency (IMA). IMA is a new field-operating agency of the Assistant Chief of Staff for Installation Management (ACSIM). Its mission is to provide equitable, efficient, and effective management of Army installations worldwide to support readiness; enable the well-being of Soldiers, civilians and family members; improve infrastructure; and preserve the environment. This new management approach eliminates the migration of base operations funds to other operational accounts below the HQDA level. It enables the development of multifunctional installations to support evolving force structure and Army Transformation needs.

The Army Installation Design Standards (IDS) provide mandatory common facility and infrastructure standards. Installations incorporate IDS to improve both the mission and visual aspects of every project on facilities. IDS is also a model to build tailored Installation Design Guides (IDG) for individual installations to meet specific needs while maintaining required standards.

With the strong support of Congress, the Army established the Residential Communities Initiative (RCI) for families. This program capitalizes on commercial expertise and private capital to perform a noncore function for the Army—family housing management. The program provides greater value to the Army by eliminating the housing deficit at our first 11 sites, while leveraging a $209M Army investment into $4.1B of initial private development. The Army's privatization program began with four pilot projects and expands to 18 active projects by the end of FY03. Pending OSD and congressional approval, 28 projects planned through 2006 will impact over 72,000 housing units or 80 percent of Army family housing in the United States. By the end of 2007, the Army plans to have the programs and projects in place to meet the OSD goal of eliminating inadequate family housing. The Army will accomplish this goal through RCI and increased Army military construction (MILCON) investment in nonprivatized family housing. The RC enhances RCI through real property exchange authority that is only available to the RC. This legislative authority allows the exchange of RC-owned property with public or private entities and has a tremendous potential to improve future RC infrastructure at no governmental cost.

Defense Reform Initiative Directive 49 and subsequent OSD guidance directed the Services to privatize utility systems unless exempted for security or cost reasons. Privatization improves the utility service for Army installations as new

owners upgrade the systems to industry standards. The Army is aggressively pursuing this initiative and has made considerable progress. The Army has privatized 83 of 351 systems with another 100 under active negotiations.

As part of Army Knowledge Management (AKM), the Army is modernizing the installation information infrastructure, or infostructure, to support a network-centric, knowledge-based Army. The Installation Information Infrastructure Modernization Program (I3MP) executes a multiyear, $3.2B program for upgrades to fiber optic and copper cable, installation of advanced digital equipment, and upgrades to Defense GIG gateways. This program ensures worldwide, high-speed data connectivity at Army installations. To date, the Army has completed 22 of 95 CONUS installations and initiated upgrades at 110 OCONUS installations. The Army plans to complete I3MP in 2009.

AKM is important to enable HSOCs, which serve as scalable, 24-hour operation hubs, to support deployed units by linking them to the national sustainment base, national assets, and other sources of knowledge. AKM also facilitates the LVC training environment crucial to a relevant and ready force.

This chapter describes the Army's concrete steps across DOTMLPF activities to build transformational capabilities. While not totally inclusive, these programs, systems, and initiatives demonstrate the holistic nature of Army Transformation in support of Defense Transformation. They also show the interdependence of Army capabilities with Joint Force capabilities. The next chapter details funding for some of these capabilities along with challenges the Army faces in balancing resourcing risks.

BALANCING RISK—RESOURCING ARMY TRANSFORMATION

9

Managing risk is a central element of both the Defense Strategy and the Army program. The Army manages risk using the Defense Risk Framework. This risk management approach is comprised of four related dimensions that can be translated into the Army's program.

Operational Risk: Defined as ensuring U.S. military and civilian personnel are ready at all times to accomplish the range of missions assigned them in the Defense Strategy. This is the Army's current readiness, which is maintained through unit training, Current Force modernization and recapitalization and sustainment.

Future Challenge Risk: Defined as anticipating future threats and adjusting capabilities to maintain a military advantage against them. This is the Army Transformation to the Future Force.

Force Management Risk: Defined as providing a trained and ready force. These are the Army People programs—Man the Force, Well-Being, and Leader Development.

Institutional Risk: Defined as developing management practices and controls that use resources efficiently and promote the effective operations of the Defense establishment. This is the Army's business and resource processes as well as its installations and infrastructure programs.

RISK IN PB04

President's Budget FY04 (PB04) prepares the Army for the next decade, but not without risk. In preparation for PB04, the Army made difficult decisions to compensate for directed guidance in support of the Current Force and maintain its commitment to accelerate transformation to reduce risk in the Future Force. To reduce future risk and fund Army transformational capabilities, the Army accepted a higher level of operational risk in the Current Force. In the three programs (PB01 to PB03) prior to PB04, the Army terminated twenty-nine programs resulting in $8.2B in savings that were reinvested in Army transformational capabilities and restructured others for an additional $4.8B. PB04 accelerated this trend with an additional $24B in terminations and restructures. These reductions and other similar decisions concentrated risk in several areas such as the operational risk of the Current Force. The Army must continue to assess the risk in its program as it tries to balance current readiness, the well-being of its people, transformation to the Future Force, and new operational commitments emerging from the GWOT.

RISK IN PB05, POM 06-11 AND FUTURE YEARS DEFENSE PROGRAMS (FYDP)

Since the submission of PB04, the global strategic environment has continued to change. As of 7 October 2003, the Army had over 327,000 Soldiers deployed in over 120 countries. Recent and projected operational commitments have caused the Army to reexamine its risk assessment—specifically how to balance risk between the Current Force and the Future Force.

Congressional supplemental funding has offset most of the costs for these operations; however, the congressional supplemental funding has not fully reimbursed the Army for ongoing operations or the redeployment of assets in support of these operations. The resulting cost of the Army's continuing global commitments introduces operational and force management risks that must be continuously evaluated in the several FYDPs.

The Army will focus on providing flexible, responsive and accelerated resource processes in support of current operations and the GWOT. The Army will also shift its focus to accelerate those identified capabilities and DOTMLPF solutions associated with the Future Force and insert them into the Current Force. Nevertheless, difficult resource decisions must be made for this acceleration and insertion—the Army should be resourced to a level at which it can appropriately balance the risk between both the Current and Future Forces.

As outlined at the end of this chapter, the Army's Program Change Proposals (PCPs) for PB05 reinforce the Army's commitment to both the FCS and the Future Force. The FCS and Complementary Systems PCP alone proposes more than $3B in additional resources.

As part of POM 06-11, the focus of Army Modernization will also be reviewed. The Army will reexamine the capability trades and the balance of risk across the Defense Risk Framework, how capabilities will be resourced across the entire force, and what capabilities need to be divested to make the plan affordable.

Again, a way to alter the risk profile within Army Transformation is by accelerating Future Force DOTMLPF solutions to the Current Force. Similarly, operational experience with the Current Force will continue to guide Future Force development and experimentation.

Force management risk addresses the Army's People programs and its force structure. With a high Current Force operational tempo associated with GWOT and other commitments, force management risk is higher than anticipated. The Army is taking active steps to reduce this risk in the near term. The following actions focus on reducing this risk:

- Rotation Plan—Implement a rotation plan that supports sustained global engagement
- Force Stabilization and Unit Manning System—Implement to revise the manning system to complement the rotation-based system of sustained global engagement and minimize individual rotations
- Modularity—Initiate a reset of the Army to a provisional design. Reorganize elements of the Current Force into prototype organizations that achieve the near-term modularity required for brigade and division echelons
- AC/RC Balance—Develop force structure options to have a modular Army and a proper mix of AC/RC forces
- Soldier and Installation as Flagships (Well-being)—Synchronize programs to the rotation plan to support families and installations when Soldiers are deployed

The Army will continue to reassess this risk in POM 06-11.

Institutional risk addresses the Army's installation and infrastructure programs as well as nonprogrammatic items such as business practices. The risk associated with these programs is acceptable and is expected to be reduced in future years. The Army is currently looking at options to improve resource processes such as the TAP and reorganization of the Army Staff to align with JCIDS.

The Army may reduce risk through smart business decisions and initiatives. The Army will leverage resource decision opportunities across DOTMLPF to increase capabilities spent over time. Risk reduction efforts may be in the form of resource investments that reduce equipment or personnel requirements and still provide the same or greater capability. By freeing up additional resources, the Army may be able to

increase capabilities or take the opportunity to accelerate capabilities intended for the Future Force and insert them into the Current Force. The Army will make these risk reduction decisions across the Defense Risk Framework for both the Current and Future Forces to achieve a smaller, lighter and more lethal force now and in the future.

FUNDING ARMY TRANSFORMATIONAL CAPABILITIES IN PB04 AND PROGRAM CHANGE PROPOSALS (PCPs) FOR PB05

The Army's program of record remains PB04. The OSD Management Initiative Decision (MID) 913 directed that POM 05-09 would result in only minor modifications. This chapter describes the Army's program of record (PB04) and briefly describes the nine PCPs the Army has submitted to OSD that will modify PB04 and its associated FYDP. Detailed PB04 program information on transformational programs is provided in Annex B.

DEFENSE TRANSFORMATION GOALS

PB04 aligned Army Transformation funding across its Current and Future Forces with the six Defense Transformation Goals (Critical Operational Goals). To support these goals, funding was increased by $16B (37 percent), for a total of $58.5B. Over 50 percent of the Army's entire research, development, and acquisition (RDA) program across POM 04-09 is clearly transformational or S&T ($11.3B).

CURRENT FORCE

The Current Force guarantees the Army's near-term warfighting readiness. Because the Army skipped a procurement generation (1990s and 2000s), the Army's combat support and CSS systems exceed their expected life (20 years for most systems). Further, 75 percent of critical combat systems exceed their expected half-life. To maintain operational readiness and to stabilize the growth in operating and support costs of the Army's aging weapon systems, the Army is recapitalizing and selectively modernizing a portion of the Current Force.

CURRENT FORCE SYSTEMS

The Current Force, which includes Stryker Brigades, heavy divisions, light divisions, aviation and SOF, has proven its combat effectiveness in OIF and OEF. The Army expects to continue funding combat operations through leveraging the use of congressional supplementals. However, the use of supplemental funding does not fully reimburse the Army for ongoing operations or the redeployment of assets in support of these operations. The Current Force must continue to be resourced to ensure warfighting readiness is maintained.

In accordance with the directed guidance in the DPG, the Army has accepted more risk in its

FY04-09 (4M)	PB 03	PB04	Increase	%Increase
Project and Sustain Power	25,571	37,849	12,278	48%
Protecting Critical Bases	2,221	2,716	496	22%
Deny Enemy Sanctuary	4,666	6,218	1,552	33%
Conducting Information Operations	563	562	-1	0%
Conduct Space Operations	1,321	1,541	220	17%
Leverage Information Technology	5,416	7,048	1,632	30%
Experimentation	2,215	2,589	373	17%
Army Transformation Total	**41,972**	**58,522**	**16,550**	**39%**

Table 9-1. Critical Operational Goals Program Summary

SELECTED PB04 UPGRADES AND RECAPITALIZATION ($M)							
Program Upgrade/Recap	**FY04**	**FY05**	**FY06**	**FY07**	**FY08**	**FY09**	**FY04-09**
Abrams M1A2 Sep	398	541	369	380	287	112	2,086
Apache AH64A	776	455	545	572	361	160	2,868
Blackhawk UH60	184	182	387	386	603	607	2,348
Chinook CH47F	530	549	607	515	659	783	3,644
Bradley M2A3 Upgrade	150	126	47	62	57	35	477

Table 9-2. PB04 Program Upgrades and Recapitalization

SELECTED PB04 REBUILD AND RECAPITALIZATION ($M)							
Program Upgrade/Recap	**FY04**	**FY05**	**FY06**	**FY07**	**FY08**	**FY09**	**FY04-09**
Abrams M1A1	132	130	133	116	0	0	511
Blackhawk UH60A	113	105	106	110	110	110	654
Chinook CH47D	24	22	34	35	47	47	208

Table 9-3. PB04 Program Rebuild and Recapitalization

Current Force in order to fund Army Transformation efforts. As previously discussed, the Army has terminated and restructured numerous programs to generate savings that were reinvested in Army Transformation. PB04 accelerated this trend by decreasing funding for Current Forces by another $22.5B of which $13.5B was reallocated to the FCS. In general, funding was increased for programs that were clearly transformational and supported the Defense Transformation goals; sustained for high-priority systems that will transition to the Future Force; and reduced for systems that are not essential to Transformation. The Army will reassess this balance in PB05 and in future defense programs.

The majority of the Army's funding for the Current Force is for systems that transition into the Future Force. These systems benefit the warfighter today and in the future to include the FCS-equipped UAs. These systems can be classified as: those that are part of the Current Force and will transition to the Future Force and those that are being built specifically for the Future Force. Focusing on systems that will benefit the Army today and into the next decade is clearly a wise use of scarce resources. Overall, the Army has $14.9B invested toward recapitalization of the Current Force. This funds the rebuild and selected upgrade of currently fielded systems to ensure operational readiness and a near zero-time/zero-mile system. Clearly, investing in these programs is prudent to ensure their ability to operate in the future (Tables 9-2 and 9-3).

STRYKER BRIGADES

The Stryker Brigades provide increased strategic responsiveness and the tactical overmatch when properly augmented to meet the full range of future operational requirements. The first two of six combat brigades are already in the process of converting to SBCTs, with the fielding of the Stryker Armored Vehicle (SAV). The first SBCT has completed all operational testing and is prepared to deploy to Iraq. The Army has allocated resources to fund the SAV, SBCT support equipment, training enablers, sustainment enablers, and infrastructure costs for all six brigades (Table 9-4).

PB04 STRYKER BRIGADE SUMMARY ($M)							
SBCT	**FY04**	**FY05**	**FY06**	**FY07**	**FY08**	**FY09**	**FY04-09**
SBCT 1 (Lewis)*	100	45	143	73	100	50	510
SBCT 2 (Lewis)*	32	17	189	66	8	0	312
SBCT 3 (Alaska)*	250	97	42	404	14	7	814
SBCT 4 (Polk)*	999	300	45	37	4	11	1,396
SBCT 5 (Hawaii)	118	1,208	175	58	8	13	1,578
SBCT 6 (ARNG)	67	27	871	632	118	8	1,724
USAREUR	35	43	132	55	5	5	275
Grand Total	**1,602**	**1,737**	**1,596**	**1,324**	**256**	**94**	**6,610**

*Does not include FY01-03 funding

Table 9-4. Stryker Brigade Summary

FUTURE FORCES

The Army is developing a Future Force that is a strategically responsive, precision maneuver force, dominant across the range of military operations. The Future Force is not meant to be envisioned as an ultimate destination, but is instead a path toward continuous change. Optimized for strategic versatility, this lighter, more agile force will dominate land operations in any future conflict, executing seamless transitions from peacetime readiness to smaller scale contingencies or major theater war.

The Future Force will be equipped with significantly advanced capabilities provided by systems such as FCS, WIN-T, and Comanche. The Future Force will be commander- and execution-centric—networked horizontally and vertically through mobile, adaptive, reliable, battle command capabilities. It will leverage joint and interagency reachback and direct downlink capabilities for intelligence, force planning, administration, technical engineering, information operations and logistical support.

In developing the Future Force, the Army is focusing on three critical challenges within the FCS program: C4ISR architecture (the Network); spiral development and field experimentation; and tactics and doctrine (complete DOTMLPF minus materiel). The ability to take emerging capabilities from Future Force programs and insert them into the Current Force must be a key component of all discussions. The FCS and other Future Force programs must remain both affordable and financially flexible so that key capabilities can be inserted into the Current Force.

PB04 FUTURE FORCE PROGRAMS ($M)							
Programs	**FY04**	**FY05**	**FY06**	**FY07**	**FY08**	**FY09**	**FY04-09**
FCS	1,701	2,684	3,426	3,733	5,629	5,005	22,178
WIN-T	86	69	176	128	277	305	1,041
Comanche	1,080	1,181	1,426	1,963	2,260	2,600	10,510

Table 9-5. PB04 Future Force Program Summary

SCIENCE AND TECHNOLOGY

PB04 SCIENCE AND TECHNOLOGY ($M)							
Science and Technology	FY04	FY05	FY06	FY07	FY08	FY09	FY04-09
PB04	1,790	1,828	1,898	1,902	1,952	1,948	11,318

Table 9-6. PB04 Science and Technology Summary

The Army S&T effort is focused on the transformational capabilities described in Chapters 2 through 5. In PB04, the Army funded $11.3B of S&T, with nearly 97 percent specifically targeted for the Future Force. This is a $1.08B increase from PB03 FYDP levels (Table 9-6). This adequately funds all of the Army's critical S&T requirements to begin the fielding of the Future Force. In addition to its own S&T funding, the Army has entered into a joint venture with the Defense Advanced Research Projects Agency (DARPA), in which DARPA provides an additional $431M of S&T funding from FY00-05, to develop key FCS technologies.

PROGRAM CHANGE PROPOSALS FOR FY05-09 PROGRAM REVIEW

The Army submitted nine PCPs to PB04 for submission in PB05. Eight of these PCPs will directly influence and accelerate development of Army transformational capabilities. These PCPs reinforce the Army's commitment to both FCS and the Future Force. The FCS and Complementary Systems PCP alone proposes an increase of over $3B. The following lists Army PCPs to PB05 summary:

- FCS and Complementary Systems—Funds FCS and Complementary Systems per the Defense Acquisition Board
- Cruise Missile Defense—Resources cruise missile defense acceleration
- Training Ammunition—Resources additional training ammunition for the Current Force
- Leader Development—Supports multiple facets of the Army's Leader Development program
- Army-Guard Restructure Initiative (AGRI)—Converts one ARNG current heavy brigade to a mobile light brigade optimized for HLS
- Rebalance Forces (Swiftly Defeat the Effort (SDTE)—Transfers selected combat support and combat service support capabilities from the RC and emerging TAA-11 requirements to the AC to reduce the requirement for involuntary mobilization of RC in first 15 days of first SDTE (complies with 9 July SECDEF memorandum)
- Rebalance Forces (High Demand/Low Density (HD/LD)—Activates RC HD units for rotational support of Posture of Engagement (POE) (complies with 9 July SECDEF memorandum)
- Use of RC for POE Requirements—PCP captures funding already programmed to support the RC mission in Stabilization Force/Kosovo Peacekeeping Force (SFOR/KFOR) by detailing funds moved from operation and maintenance (O&M) to military pay. The SECDEF directed the Services to submit PCPs to allow RC capabilities for meet predictable, long lead-time missions such as rotational overseas presence and experimentation
- Increase Use of Reachback—PCP identifies those actions already underway, along with future refinements and new initiatives that will be pursued to leverage reachback support to forward operations while reducing the deployed footprint

The Army's Current to Future Force transformation concept requires smart business decisions. The Army will leverage resource decisions across the DOTMLPF that increase

capabilities per dollar spent over time. The Army continues exploring and integrating select new and faster ways to employ existing capabilities and rapidly integrates select new technologies in the operational force, and undertakes generating force enhancements that increase current readiness and relevance. Exploiting these enhancements will increase the Army's flexibility, utility, and effectiveness as part of the joint force. Smart business decisions or actions that the Army is currently taking are in the areas of the Unit Rotation Plan, Force Stabilization and Unit Manning System, Modularity, AC/RC Balance, and Soldier and Installation as Flagships (Well-being) and other initiatives.

CONCLUSION—ARMY LONG-TERM TRANSFORMATION 10

Army Transformation is an ongoing, continuous process rather than a distinct entity or end state. It fundamentally changes the way Army forces operate within a joint team and expands the range of military options for the President, SECDEF, and combatant commanders for global full-spectrum operations. Army Transformation ensures the Army continues to provide the JFCs with essential campaign-capable and network-centric land power capabilities. Infused with a joint and expeditionary mindset, Army forces contribute to joint operations by enabling the JFC to conduct prompt, simultaneous, and sustained operations to achieve decisive conflict resolution through the control of land, people, and resources.

While strategic and operational environments change and JOCs mature and evolve, the Army must maintain its ability to deliver ready and relevant land power capabilities to the Joint Force. The Army must maintain a level of robust investment in research and development. Further, the Army must invest in collaboration with the other Services, government agencies, industry, and academia to reduce future risk and maintain military superiority over adaptive adversaries. The following discussion provides some broad thoughts on Future Force capabilities beyond the horizon articulated in the TPG to focus future S&T efforts.

Soldiers are the centerpiece of the Army and Army formations. Expanding their battle command capabilities enhances interdependent, network-centric warfare. Investments in communication and computational power exploit information age technology to seamlessly network people and systems—horizontally and vertically—into the joint network. This joint network provides the tool to joint forces that enables them to operate at unprecedented levels of synchronization.

Continuous connectivity to the GIG empowers Soldiers to conduct full-spectrum operations. In addition to near real time situational awareness in the tactical area of operations, Army personnel have access and provide information to HSOCs, knowledge centers, and other information-enabling portions of the joint team—redefining the term reachback. This access to knowledge facilitates rapid and seamless transitions of missions and tasks without loss of momentum. Automated and integrated operations of manned and unmanned systems improve effective employment of those assets and increase survivability and lethality of the force. Instantaneous translation capabilities promote multinational operations and stabilization of indigenous populations to exploit intelligence and enhance speed of conflict resolution.

Automation advances also change the way Soldiers and units train and how they are fielded with new equipment. Faster computers, higher bandwidth networks, and shared databases enable simulations to create fully integrated, LVC environments at all levels. These capabilities also facilitate life-long distance learning and professional development as well as rapid assimilation of lessons learned from the operating environment into individual and unit training.

Army Core Competencies

- Train and equip Soldiers and grow leaders
- Provide relevant and ready land power capability to the combatant commander and the joint team

Advanced capabilities in Soldier uniforms and equipment similarly increase the readiness of the Joint Force. Human engineered equipment imbed Soldier experiences in the development process and reduce unit set fielding and new equipment training times. Nanotechnology improvements enable personnel to operate in all-weather and hazardous environments with lighter individual equipment. Nanotechnology advances also provide the capability to monitor physiological health throughout the force and to automatically initiate treatment or performance enhancements.

Nanotechnology is expected future manufacturing technology that will make most products lighter, stronger, cleaner, less expensive and more precise.

Investments in biomedical research provide biomedical solutions to protect the health of Soldiers and sustain their physical and cognitive performance. Biomedical research products, such as human-physiology-based models and equipment design criteria, training strategies, and nutrient and drug interventions, enable effective personal protection equipment, provide methods to monitor cognitive status, and sustain cognitive performance. Biomedical research strategies help Soldiers rapidly acclimate and optimally perform in extreme environments, facilitate the design and testing of survivable weapon systems, and promote the development of optimal rations to sustain Soldier performance under extreme conditions. Biomedical research advances promote force protection through innovative medical countermeasures to protect Soldiers from both endemic global diseases and from chemical and biological weapons. These countermeasures include multicomponent and multi-agent vaccines, chemical prophylaxes, improved vector control strategies, post-exposure treatments, and environmental monitoring devices.

Power and munitions advancements improve the capability to conduct prompt and sustained decisive operations. Multitasking munitions enhance lethality while reducing the quantity of platforms and the total munitions load. Fuel cell technology provides energy for sustained operations of platforms and weapons while simultaneously producing water. Micro-fuel cells replace batteries in many applications and provide long-term power to Soldier systems. These technologies increase the responsiveness of the Joint Force by decreasing the support tail of the deployed force through the reduction of logistics footprint and demand in theater.

Revolutionary changes in both Army and joint inter- and intra-theater lift assets dramatically increase strategic responsiveness and operational agility. New and improved airlift and sealift platforms enhance expeditionary capabilities and precision force application across the battlespace. New and advanced rotary wing aircraft similarly facilitate joint fires, maneuver, and battle command. These systems enable the Joint Force to exploit vertical envelopment, ship-to-shore, and OTH capabilities.

Exploitation of unmanned platforms becomes the normal mode of operation within the Joint Force. Reduction in weight and size of sensor and communications packages on UAVs increase capabilities for autonomous, multimission operations as well as manned and unmanned teaming. Ground station improvements reduce the size and power requirements necessary to interface with the UAVs. Unmanned ground systems enable joint forces to operate in complex terrain while enhancing lethality and force protection. In addition to reconnaissance, unmanned systems impact all aspects of the battlefield to include battle command, force application, protection, and logistics. Expanded use of unmanned systems fundamentally alters the manner in which the Joint Force will see first,

understand first, act first, and finish decisively. In complementary ways, advances in information technology and the development of interactive and learning analytical tools and processes significantly improve the ability of operational forces to fuse the exponential growth in data.

SUMMARY

The ATR is the Army Transformation Strategy to manage the actions and activities across the DOTMLPF domains to build new capabilities for the Current Force. It also develops the essential capabilities to make the Future Force relevant, responsive, and dominant to emerging threats. The Nation's first Commander-in-Chief, George Washington, crafted the original charter for the Army in 1775 when he stated, "Let us have a respectable Army, and one such as will be competent to every contingency." The goal of Army Transformation is the development of the Future Force—a strategically responsive, precision maneuver force, dominant across the range of military operations. Development of the Future Force allows the Army to accelerate proven DOTMLPF capabilities to enhance the effectiveness of the Current Force. Implementation of the Army Transformation Strategy provides the relevant, ready, and dominant land power capability to combatant commanders and the joint team now and in the future.

SUPPORT OF THE SIX CRITICAL OPERATIONAL GOALS (COGS)

A

SIX CRITICAL OPERATIONAL GOALS FOR TRANSFORMATION

- **Protecting Critical Bases of Operations** (U.S. homeland, forces deployed, allies, and friends) from CBRNE weapons and their means of delivery.
- **Projecting** and sustaining U.S. forces in distant anti-access and area-denial environments and defeating anti-access and area-denial threats.
- **Denying** enemies sanctuary by providing persistent surveillance, tracking and rapid engagement with high-volume precision strike, through a combination of complementary air and ground capabilities, against critical mobile and fixed targets.
- **Assuring** information systems in the face of attack and conducting effective information operations.
- **Enhancing** the capability and survivability of space systems and supporting infrastructure.
- **Leveraging** information technology and innovative concepts to develop an interoperable, joint C4ISR architecture and capability that includes a tailorable joint operational picture.

The Army capabilities described in the preceding chapters support the six critical operational goals for Defense Transformation. The following is a summary of key updates from the information related to COGs provided in last year's Roadmap.

PROTECTING CRITICAL BASES OF OPERATION (U.S. HOMELAND, FORCES DEPLOYED, ALLIES AND FRIENDS) FROM CBRNE WEAPONS AND THEIR MEANS OF DELIVERY.

The Army's efforts to protect critical bases of operations and defeat CBRNE weapons and their means of delivery continue along two mutually supporting axes: protecting the U.S. homeland, our most important responsibility, and protecting the Joint Force. The latter subsumes the defense of allies and friends from whose territory the Joint Force might operate.

The Army has begun several organizational initiatives to transform its support to HLS. Working closely with NORTHCOM, the Army will complete the development of its underlying concept for homeland defense in 2004. Supporting the HLS JOC, the Army will continue to provide unique capabilities for HLD, CS, and EP. To improve its ability to support CBRNE defense both in the homeland and to the Joint Force, the Army will form a CBRNE command. This command will integrate, coordinate, deploy, and provide trained and ready CBRNE defense forces, and will exercise command and control of full-spectrum CBRNE operations to JFCs. The CBRNE command will also provide Army support to civil authorities for homeland defense, while maintaining technical links with appropriate joint, federal, and state CBRNE assets, as well as research, development and technical communities to assure Army CBRNE response

readiness. In addition to the CBRNE command, the Army has formed, and designated a commander of the Global Air and Missile Defense Command and begun the AGRI and CONUSA redesign to support homeland defense for the future.

Protecting critical bases of operations also includes Army installations, the source of power projection and reachback capabilities. The Joint Services Installation Pilot Program (JSIPP) and Joint Program Guardian are designed to further enhance installation emergency response capabilities for CBRNE events. These initiatives will also further enhance chemical and biological detection capabilities on Army installations. Guardian will provide prioritized Army installations with an integrated CBRNE protection and response capability to reduce casualties, maintain critical operations, contain contamination, and effectively restore critical operations. JSIPP will initially provide chemical and biological detection technology to pilot domestic Army installations, and connect this detection capability to the installation's emergency management centers. JSIPP will also provide equipment and training to the emergency responders on the installations, including police, fire, medical, and explosive ordnance disposal. Additionally, the Army will create 11 Installation Support Teams (ISTs) and four Regional Response Teams (RRTs) in FY04-05 to complement this joint effort.

For deployed joint forces, the Army will significantly improve contamination avoidance capability with a standoff detection capability for biological weapons. Beginning in FY05, an interim Joint Biological Standoff Detection System (JBSDS) will be fielded that will provide Joint commanders with an early-warning biological detection capability. Standoff technology will enable nuclear, biological, and chemical (NBC) defense units to detect biological warfare agents up to five kilometers away and discriminate up to three kilometers away. The fielding of the CBRNE Battle Management System in FY06 will provide joint forces with a common database architecture for NBC warning, reporting, and battlefield management.

To defend the Nation from the increased threat and global proliferation of ballistic missiles, DOD is developing a Ballistic Missile Defense System (BMDS) that is a key element of the NSS and a mission of national strategic importance. The Army's GMD element is the cornerstone of Initial Defense Operations (IDO) to be established by the end of FY04. It will have an IDO capability not later than 30 September 2004. Additionally, within established Joint processes, the Army will aggressively develop terrestrial-based missile defense forces and exploit the capabilities of other missile defense systems and air and space sensors to support Future Force capabilities.

PROJECTING AND SUSTAINING U.S. FORCES IN DISTANT ANTI-ACCESS AND AREA-DENIAL ENVIRONMENTS AND DEFEATING ANTI-ACCESS AND AREA-DENIAL THREATS.

The most significant development for this critical operational goal over the last year has been the Army's repositioning with the Integrated Global Basing and Positioning Strategy. Supporting efforts contributing to this capability are APS reconfiguration, the Army Regional Flotilla (ARF) concept and expeditionary basing. The conceptual driver for this capability is the current 1-4-2-1 DOD force-sizing construct. The primary purpose for reconfiguring APS is to enhance responsiveness to crises in the four designated critical regions (Northeast Asia, East Asian Litorals (EAL), SWA and Europe). Prepositioned assets have been reapportioned and relocated to sites providing better response in these regions.

In addition to changes in ground-based prepositioned stocks, the Army is adapting afloat stocks to better align with the evolving defense strategy. Afloat APS will evolve over time using an ARF concept. The ARF concept envisions

dividing afloat APS into three afloat sets, dispersed geographically, providing modular capabilities designed and loaded to provide combatant commanders with more flexible response options.

Expeditionary basing concepts are also being considered to mitigate anti-access and area-denial challenges. Concepts under consideration include floating forward-staging bases and an afloat air assault capability. The Army's continued procurement of the shallow draft TSV will contribute greatly to defeating anti-access and area-denial threats by providing greatly enhanced employment options for JFCs.

DENYING ENEMIES SANCTUARY BY PROVIDING PERSISTENT SURVEILLANCE, TRACKING AND RAPID ENGAGEMENT WITH HIGH-VOLUME PRECISION STRIKE, THROUGH A COMBINATION OF COMPLEMENTARY AIR AND GROUND CAPABILITIES, AGAINST CRITICAL MOBILE AND FIXED TARGETS.

Current and future operational environments will feature adversaries who will avoid direct confrontation with U.S. forces wherever possible, unless it is to their advantage. The overwhelming combat power of the Joint Force compels the enemy to find ways to mitigate force application (maneuver and precision engagement) capabilities such as hiding among noncombatants and using hardened, camouflaged, and concealed positions to avoid detection and attack by fires. Ground forces are often the only instruments that can deny the enemy sanctuary and attack targets to achieve desired effects.

Army forces provide significant force application capabilities across the spectrum of conflict in all weather and terrain to the JFC. Army Transformation efforts are providing a wide range of DOTMLPF integrated solutions that enhance these capabilities to make it a more maneuverable, precise, and lethal force for denying enemies sanctuary. Recent joint operations in Afghanistan and Iraq have provided initial, positive results for the Army Transformation efforts and demonstrated the importance of the Soldier on the ground to determine the final and sustaining outcome of victory in combat.

Army modernization and recapitalization efforts involve development and fielding of new equipment systems and the rebuild and selective upgrade of existing equipment. These efforts improve Joint Force capabilities (i.e., maneuverability, persistent surveillance, tracking, targeting, munitions range, precision, and lethality effects, and damage assessment) by developing and integrating a system of systems.

The M270A1 MLRS, AN/TPQ-36 Firefinder (V5, V7, V8) Radar, Field Artillery Ammunition Supply Vehicle (FAASV), and Patriot GSE are all systems being rebuilt under the Army's recapitalization program focused on improving its counterattack corps assets. This program improves unit effectiveness and warfighting capability by extending the useful life of equipment as well as improving its reliability, safety, and maintainability and reducing operation and support costs. Upgrading the Paladin's Automatic Fire Control System (AFCS) with the updated Paladin Digital Fire Control System (PDFCS), upgrading the Firefinder Radar, and fielding the Advanced Field Artillery Tactical Data System (AFATDS) are also key equipment upgrades providing improved digitization and situational awareness to maintain capability overmatch.

In FY05, the Army will begin fielding enhanced force application capabilities in indirect fire systems such as the lightweight 155mm (LW155) Howitzer, the HIMARS, and the AN/TPQ-47 Firefinder Radar System. The LW155 and HIMARS will replace most M198 Howitzers in the Army and provide a mobile, deployable, deep-strike capability for early-entry operations. The Firefinder AN/TPQ 47 Radar will provide improved targeting capabilities at operational depths to support Joint Force opera-

tions. The Army is currently fielding SBCT with improved capabilities that will include the LW155. HIMARS, while not organic to the SBCT, will be available to provide medium- and long-range GMLRS rocket and ATACMS missile fires. Additionally, SBCTs will be fielded with the Phoenix Sensor System to replace the aging AN/TPQ-37 artillery locating radar to provide a detection capability for mortars to 15 km, rockets to 150 km, and missile launches to 300 km.

Besides indirect fire systems, there are other systems being fielded that enhance force application capabilities. For example, the Land Warrior program will make the individual infantry Soldier a sensor, decision maker, shooter, and assessor of a full range of joint effects. Profiler, the next generation meteorological system, will provide target-area meteorological information critical to accurate fires in the JOA.

To shape the battlespace and conduct decisive operations, the Army is also moving toward common munitions and a suite of long-range, precision-strike weapons. The corps commander will have a true organic deep-strike capability with rockets and missiles that have longer ranges, more lethality, and increased precision than those currently fielded. The Army will also begin production of smart and brilliant munitions, greatly increasing lethality against selected high-value targets while decreasing logistical and ammunition requirements.

Force application capabilities will be significantly enhanced by FCS development and fielding by the end of this decade. FCS is the centerpiece of the Future Force providing fundamental changes in warfighting capabilities. Science and technology will provide for the development of smaller, lighter, more mobile weapons platforms capable of effective fire support throughout the battlefield. Technological advances will be applied to target accuracy, artillery acquisition, and area meteorology systems for the Future Force. Advances in composite materials and ballistic protection technology will be applied to existing and future systems to reduce weight and increase deployability, survivability, and maneuverability. Unifying the Future Force will be a networked C2 system of fires that fully integrates all FCS component systems and links to joint fires.

There are a number of FCS designs currently being considered to provide enhanced force application capabilities to the Joint Force. It is envisioned that the FCS NLOS cannon will replace both 105mm and 155mm systems at the UA level to provide accurate, reliable, responsive on-demand, 24-hour, all-weather, and all-terrain close supporting fires with a wide array of precision and nonprecision munitions for the Future Force. Additionally, NLOS mortars will provide support to the UA. The FCS NLOS-Launch System (NLOS-LS), a networked system of missile launchers with C2 systems, will be fielded at the UA and UE levels to provide precision and loitering attack munitions. HIMARS Preplanned Product Improvement (P3I) will provide a lightweight, deployable weapons platform to support the UE with GMLRS and ATACMS missiles. This platform will be developed to support specific munitions. The combination of NLOS mortar, cannon, launch systems and HIMARS will provide the future JFC with greatly increased precision and lethal capability.

ASSURING INFORMATION SYSTEMS IN THE FACE OF ATTACK AND CONDUCTING EFFECTIVE INFORMATION OPERATIONS.

The institution of information operations as an aspect of operations, more or less equivalent to offense and defense, is in itself transformational for the Army. The general strategy is to focus on the development of adaptive Soldiers and leaders who are the essential component of this capability. As this cadre of adaptive leaders and Soldiers grows and matures, the Army will integrate them and the capability they create into increasingly lower echelons. Finally, the Army will enable them with adaptive and flexible programs for acquiring and developing technology

for immediate use, creating the responsiveness required by Joint operations.

ENHANCING THE CAPABILITY AND SURVIVABILITY OF SPACE SYSTEMS AND SUPPORTING INFRASTRUCTURE.

The interdependence of the Joint Force relies heavily upon the full range of space-based assets. As the Army transforms, it will refine and enhance its ability to exploit the capabilities of space systems and field capabilities to deny this same capability to adversaries. The Army approved a concept for space operations in *TRADOC Pamphlet 525-3-14, The United States Army Concept for Space Operations in Support of the Objective Force*, and an *Army Space Policy*, (April 2003), to establish the road ahead for enhancing Future Force capabilities. These documents will guide the Army as it develops future capabilities and coordinates requirements with the other Services.

The Army role in space operations is guided by five essential tasks: enable situational understanding and joint battle command en route, off-the-ramp, and on-the-move; support precision maneuver, fires, and sustainment; contribute to continuous information and decision superiority; support increased deployability by reducing in-theater footprint; and protect the force during all phases of operations.

To accomplish these tasks, space-based systems must improve and transform. Tactically relevant space systems and services require unprecedented levels of responsiveness, accuracy, timeliness, and dynamic interaction with other battlefield systems. Therefore, the Army shall pursue and advocate the following capabilities:

- **Responsive, dynamic, space-based intelligence, surveillance, and reconnaissance sensors networked with land, sea, air, and Soldier sensors** that enable responsive in-theater tasking, rapid retasking, processing, and exploitation through reach, forward downlink sites and direct push-pull links to tactical forces
- **Seamlessly integrated, dynamic bandwidth satellite communications (SATCOM) on the move** providing dismounted and mounted forces, who use advanced antenna technology, with assured and immediate reach in all directions to any distance for continuous battle command, communications, intelligence, and collaborative, distributed mission planning and rehearsals
- **Responsive, tactically relevant space control capabilities synchronized and integrated with land, sea, air, and information operations** to support continuous information, Joint battle command, and decision superiority using a mix of Army land-based and Joint air-, sea- and space-based capabilities to rapidly assess space-based capabilities impact to operations, protect land force interfaces to space systems and, if necessary, negate (deny, disrupt, deceive, degrade, and destroy) enemy use of space system capabilities
- **Assured, accurate, real-time missile warning and tracking distributed directly to affected forces and Battle Command Systems** to enhance protection through accurate prediction of impact areas and immediate warning to those in affected areas, and enhance survivability through continuous, real-time, target-quality tracking of ballistic and cruise missiles for battle command cueing and intercept using integrated missile defense capabilities
- **Precise, redundant, jam-resistant position, velocity, navigation, and timing services** using strengthened signals from GPS and augmentation capabilities to enable effective battle command and precision engagement through continuous and precise real-time position and tracking of forces and assets; assured navigation in hostile environments and complex terrain; continuous timing assurance; and smart munitions guidance for standoff weapons engagements

- **Advanced sensors for timely, tailorable weather, terrain, and environmental monitoring** to provide a targeting quality terrain database for three-dimensional battlefield visualization and timely knowledge of operational impacts caused by changes in the environment

Integration of military and commercial space capabilities will contribute to the ability to achieve the information superiority and full BA necessary for full-spectrum dominance. Enabling ground commanders to operate on their own terms and at the time, place, and method of their choosing, robustly supports the Future Force to see first, understand first, act first, and finish decisively. These capabilities have been vividly demonstrated during recent combat operations in Afghanistan and Iraq, and will be shown to an even greater degree in the future.

Ongoing and planned organizational changes will enable the U.S. Army Space and Missile Defense Command (USASMDC) to better execute the Command's new role as the Army Service Component Command (ASCC) to the U.S. Strategic Command (USSTRATCOM) in a global and strategic manner. The Command recently converted the 1st Space Battalion to the first modification table of organization and equipment (MTOE) space unit in the Army. External to USASMDC, space support elements will be embedded as an organic element for Future Force organizations.

Additionally, the Army continues to train a cadre of Space Operations Officers to perform Army and Joint missions as the ASCC to USSTRATCOM. Two classes of Space Operations Officers graduated from the FY03 USASMDC Functional Area 40 Course in Colorado Springs, and classes are planned to meet future requirements in FY04.

Achievement of these space capabilities and their synergistic effects with other battlefield capabilities will dramatically change how Army and Joint forces collect, exploit, and distribute information. These integrated capabilities will enable Soldiers and leaders to continuously assess and visualize the situation, describe the battlefield, direct the elements of combat power, and protect the force with the confidence of assured information.

LEVERAGING INFORMATION TECHNOLOGY AND INNOVATIVE CONCEPTS TO DEVELOP AN INTEROPERABLE, JOINT C4ISR ARCHITECTURE AND CAPABILITY THAT INCLUDES A TAILORABLE JOINT OPERATIONAL PICTURE.

The Army's interpretation of information technology as it relates to a Joint Operational Picture is battle command. The key development for this critical operational goal is its incorporation into the Army's comprehensive strategy for battle command. In the Army's view, the purpose of C4ISR (C2 + C2 + ISR) is to enable the commander to make timely and appropriate decisions and to convey those decisions effectively to subordinates over strategic, operational, and tactical distances. The Army Battle Command Plan guides the transformation of the Army into a network-centric force no later than 2009, using a baseline of capabilities derived from the lessons learned from OEF and OIF. Concurrently, the Army will develop, build, and eventually field a single, integrated Battle Command System for the Current and Future Forces, capable of interoperating with joint and multinational forces, and other agencies.

Networked battle command depends, in part, on geospatial data production, integration, and distribution processes. Mission planning and rehearsal systems, embedded training systems, and ISR systems require consistent geospatial data. The Army and other Defense agencies have been aware of this conceptual need for some time; this awareness has not translated into rigorous definition of requirements that support the acquisition and concept development process. For this reason, the Army created a Geospatial Data Integrated Master Plan Working Group, composed of members of the Army, the Joint

Staff, and National Imaging and Mapping Agency (NIMA) to identify the requirements and develop a plan to meet them. The working group is responsible for developing a master plan that addresses the needs of the user community to provide consistent geospatial data. The plan will ensure the acquisition, development, and fielding of an end-to-end process that addresses doctrine, policy, and architecture issues.

ARMY TRANSFORMATION SUMMARY

B

TRANSFORMATION PROGRAMS ALIGNED WITH COGs AND JOCs										
	CRITICAL OPERATIONAL GOALS						JOINT OPERATING CONCEPTS			
	Project and Sustain U.S. .Forces	Protecting Critical Bases	Deny Enemy Sanctuary	Conduct Information Operations	Maintain Space Superiority	Leverage Information Technology	Major Combat Operations	Strategic Defense	Homeland Security	Stablity Operations
Future Combat Systems (FCS)	X						X	X	X	X
Stryker Armored Vehicle (SAV)	X						X	X	X	X
Comanche	X						X	X	X	X
Hypervelocity Missile Program	X						X			
Countermine Program	X						X			X
Joint Land Attack Cruise Missile Defense Elevated Netted Sensor (JLENS)		X					X	X		
Medium Extended Air Defense System (MEADS)		X					X	X		
Theater High Altitude Air Defense System (THAAD)		X					X	X	X	
Mobile Tactical High Energy Laser (MTHEL)		X					X	X	X	
Tactical Unmanned Aerial Vehicle (TUAV)			X				X	X	X	X
Guided Multiple Launch Rocket System (GMLRS)			X				X			
Army Tactical Missile System (ATACMS)			X				X			
Excalibur, Advanced Artillery Munitions			X				X			
Aerial Common Sensor			X				X	X	X	X
Information Operations				X			X	X	X	X
Space Operations					X		X	X	X	X
Soldier Modernization Program						X	X			X
Warfighter Information Network-Tactical (WIN-T)						X	X	X		X
Joint Tactical Radio System (JTRS)						X	X	X	X	X
Network-Centric Information Warfare						X	X	X	X	X
Distributed Common Ground System-Army (DCGS-A)						X	X	X	X	X

Table B-1. Transformation Programs aligned with Critical Operational Goals

ARMY TRANSFORMATION SUMMARY

PB04 resources Army Transformation and supports the six COGs. The Army's PB04 funding for Transformation has been increased to $58.5B to support these goals, while additional resources have been identified in the PB05 submission. However, PB04 remains the program of record until PB05 is submitted to Congress.

FY04-09 ($M)	PB03	PB04	Increase	%Increase
PROJECT AND SUSTAIN POWER				
FCS	9,200	22,178	12,979	141%
Comanche	11,780	10,514	-1,265	-11%
Stryker	3,765	3,996	231	6%
Countermine	308	540	232	75%
Hypervelocity Missile	518	620	102	20%
Total	25,571	37,849	12,278	48%
PROTECTING CRITICAL BASES				
MTHEL	134	559	425	317%
MEADS	1,696	1,676	-20	-1%
JLENS	391	482	91	23%
THAAD*	0	0	0	0%
Total	2,221	2,716	496	22%
DENY ENEMY SANCTUARY				
TUAV/UAV	1,301	1,240	-60	-5%
GMLRS	561	1,981	1,420	253%
Excaliber	258	1,180	923	358%
ATACMS	1,970	688	-1,281	-65%
ACS	576	1,128	552	96%
Total	4,666	6,218	1,552	33%
CONDUCTING INFORMATION OPERATIONS	563	562	-1	0%
CONDUCT SPACE OPERATIONS	1,321	1,541	220	17%
LEVERAGE INFORMATION TECHNOLOGY				
WIN-T	736	1,041	305	41%
JTRS	1,150	1,709	559	49%
Soldier Modernization	1,816	1,998	183	10%
Network Centric InformationWarfare	1,393	1,672	279	20%
DCGS-A	320	627	308	96%
Total	5,416	7,048	1,632	30%
EXPERIMENTATION	2,215	2,589	373	17%
ARMY TRANSFORMATION TOTAL	41,972	58,522	16,550	39%

*THAAD has $6.9B in MDA Budget projected to transition to the Army in FY06

Table B-2. Critical Operational Goal Summary

The purpose of this section is to outline the Army's "clearly transformational" programs as they pertain to the six COGs. The programs in this annex are consistent with the OSD (PAE) FYDP definitions of what is clearly transformational.

Project and Sustain Power. While our enemies work to deny the Joint Force access to theaters of operation, the Army is working to assure access. The Army's foremost contribution to this goal is the ability to provide strategically responsive and dominant land forces.

The Future Combat Systems (FCS) is the Army's multifunctional, multimission, reconfigurable, system of systems designed to maximize joint interoperability, strategic transportability, and commonality of mission roles. During the PB03-PB04 cycle, the Army prepared for the Defense Acquisition Board's (DAB's) Milestone B decision in FY03, with production in FY06, the first unit equipped (FUE) in FY08, and an IOC by the end of this decade for the first UA. During preparation for Milestone B, Army leadership made several decisions, based on technology maturity, developmental schedule, and available funding, that shaped the changes between PB04-PB05. The outcome of these decisions resulted in a refined focus for the FCS program for PB05. These decisions and additional funding will be applied in the PB05 submission.

FCS ($M)	FY04	FY05	FY06	FY07	FY08	FY09	FY04-09
PB03 Data	399.9	771.4	1,786.2	2,033.3	2,081.0	2,128.0	9,199.7
PB04 Data	1,701.3	2,683.7	3,425.5	3,732.9	5,629.3	5,005.7	22,178.4
PB03/PB04 Delta	1,301.4	1,912.3	1,639.3	1,699.6	3,548.3	2,877.7	12,978.7
PB03 to PB04 % Growth	**325.5%**	**247.9%**	**91.8%**	**83.6%**	**170.5%**	**135.2%**	**141.1%**

Table B-3. Future Combat Systems Program Summary

The **Comanche** program is the Army's armed reconnaissance helicopter and light attack weapon system of the future and the centerpiece of the Aviation Modernization Plan (AMP). Comanche will conduct three core missions (reconnaissance, close combat, and mobile strike) as an integral part of the air-ground maneuver team and will also support a fourth mission, vertical maneuver. These missions are based on distributed operations that rely on the commander's ability to attain comprehensive situational understanding of the enemy's disposition. Comanche therefore is an integrator, a sensor, and a shooter. The Army has fully funded Comanche in accordance with the DAB-approved program. Total funding for the Comanche program decreased for PB04 based on the DAB-approved program restructure and OSD-directed Cost Analysis Improvement Group (CAIG) cost estimate.

Comanche ($M)	FY04	FY05	FY06	FY07	FY08	FY09	FY04-09
PB03 Data	990.09	1,413.7	1,486.5	2,572.6	2,630.0	2,686.0	11,779.7
PB04 Data	1,080.7	1,181.6	1,428.5	1,962.8	2,260.4	2,600.4	10,514.2
PB03/PB04 Delta	89.8	-232.1	-58.0	-609.9	-369.6	-85.6	-1,265.5
PB03 to PB04 % Growth	**9.1%**	**-16.4%**	**-3.9%**	**-23.7%**	**-14.1%**	**-3.2%**	**-10.7%**

Table B-4. Comanche Program Summary

The **Stryker** program is the primary combat and combat support platform for the SBCT and fulfills an immediate requirement for a strategically deployable, combat ready platform. This family of vehicles stresses performance and commonality that will reduce the logistics footprint and minimize sustainment costs. The Army continues to fully fund the procurement of six SBCTs.

Stryker ($M)	FY04	FY05	FY06	FY07	FY08	FY09	FY04-09
PB03 Data	1,038.9	847.8	780.4	831.9	97.7	168.5	3,765.2
PB04 Data	1,016.4	1,022.2	911.1	780.0	97.7	168.5	3,995.9
PB03/PB04 Delta	-22.5	174.4	130.7	-51.9	0.0	0.0	230.7
PB03 to PB04 % Growth	**-2.2%**	**20.6%**	**16.7%**	**-6.2%**	**0.1%**	**0.0%**	**6.1%**

Table B-5. Stryker Program Summary

The **Countermine** program will provide assured and rapid surveillance, reconnaissance, detection, and neutralization of mines. The Ground Standoff Mine Detection System (GSTAMIDS) provides a near-term capability to execute the on-route countermine mission while the Army continues to develop Future Force capabilities. Other systems include the Handheld Standoff Minefield Detection System (HSTAMID), RDT&E for mine detection/neutralization and countermine advanced development and a robotic combat support system.

Countermine ($M)	FY04	FY05	FY06	FY07	FY08	FY09	FY04-09
PB03 Data	59.4	45.4	50.5	47.5	52.0	53.0	307.9
PB04 Data	64.9	53.8	65.7	72.6	130.5	152.7	540.2
PB03/PB04 Delta	5.5	8.4	15.1	25.1	78.5	99.7	232.3
PB03 to PB04 % Growth	**9.2%**	**18.5%**	**30.0%**	**52.9%**	**150.9%**	**188.1%**	**75.4%**

Table B-6. Countermine Program Summary

The **Hypervelocity Missile** program is developing missiles that are less than four feet long and weigh less than fifty pounds. This revolutionary development will allow for a lighter, more lethal force. The Army is leveraging miniaturized guidance and control actuation technology, high-fidelity visual digital simulation, advanced composite motor and structure technology, fire control, and insensitive—nondetonable propulsion technology.

Hypervelocity Missile($M)	FY04	FY05	FY06	FY07	FY08	FY09	FY04-09
PB03 Data	151.7	124.0	71.4	56.1	57.0	58.0	518.3
PB04 Data	136.3	125.8	107.7	86.5	80.0	83.5	619.9
PB03/PB04 Delta	-15.4	1.8	36.2	30.4	23.0	25.5	101.6
PB03 to PB04 % Growth	**-10.2%**	**1.5%**	**50.7%**	**54.2%**	**40.4%**	**44.0%**	**19.6%**

Table B-7. Hypervelocity Missile Program Summary

Protect Critical Bases. The Army protects the homeland, allies, and the Joint Force by providing land-based air and missile defense and CBRNE defense.

The **Mobile Tactical High Energy Laser** (MTHEL) is a mobile, ground-based directed energy weapon system based upon laser technology. This high-energy laser weapon system uses proven laser beam generation technologies, beam-pointing technologies, and existing sensors and communication networks to provide a new, active defense capability in counter-air missions. The MTHEL is designed to demonstrate, test, and field the first modular directed energy system capable of engaging and destroying rockets, artillery, and mortar threats. This is a cooperative (50 percent funding) effort between Israel and the United States. The Army has increased funding in this program to $558.6M.

MTHEL ($M)	FY04	FY05	FY06	FY07	FY08	FY09	FY04-09
PB03 Data	39.8	39.7	24.8	9.9	10.0	10.0	134.1
PB04 Data	39.1	39.0	24.3	59.4	141.1	255.7	558.6
PB03/PB04 Delta	-0.7	-0.7	-0.5	49.5	131.1	245.7	424.5
PB03 to PB04 % Growth	**-1.7%**	**-1.7%**	**-1.9%**	**501.4%**	**1311.2%**	**2456.9%**	**316.6%**

Table B-8. Mobile Tactical High Energy Laser (MTHEL) Program Summary

In April 2003, the Defense Acquisition Board directed that the Patriot and **Medium Extended Air Defense Systems (MEADS)** combine into one program. MEADS is the replacement for the Patriot and will provide a robust 360-degree defense against SRBMs, cruise missiles, and air-breathing threats. The Army is working toward a March 2004 DAB that will define the requirements of a combined international program and move the current risk reduction effort into design and demonstration.

MEADS ($M)	FY04	FY05	FY06	FY07	FY08	FY09	FY04-09
PB03 Data	280.6	272.1	277.1	281.9	289.0	295.0	1,695.7
PB04 Data	276.3	267.3	271.7	276.2	289.5	295.2	1,676.1
PB03/PB04 Delta	-4.3	-4.8	-5.4	-5.7	0.5	0.2	-19.6
PB03 to PB04 % Growth	**-1.5%**	**-1.8%**	**-2.0%**	**-2.0%**	**0.2%**	**0.1%**	**-1.2%**

Table B-9. Medium Air Defense Systems (MEADS) Program Summary

The **Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS)** is an elevated sensor system that detects, tracks, identifies, and classifies very low-flying, small signature Land Attack Cruise Missiles (LACMs). It provides surveillance to a range of 280 km and fire control to a distance of 150 km. JLENS contributes to the SIAP by integrating multiple OTH C3 networks.

JLENS ($M)	FY04	FY05	FY06	FY07	FY08	FY09	FY04-09
PB03 Data	56.5	57.4	68.1	67.9	70.0	71.0	390.9
PB04 Data	57.5	56.4	66.8	76.3	78.5	146.0	481.6
PB03/PB04 Delta	1.0	-1.0	-1.3	8.4	8.5	75.0	90.6
PB03 to PB04 % Growth	**1.8%**	**-1.7%**	**-1.9%**	**12.4%**	**12.1%**	**105.6%**	**23.2%**

Table B-10. Joint Land Attack Cruise Missile Defense Elevated Netted Sensor (JLENS) Program Summary

The **Theater High Altitude Air Defense System (THAAD)** is designed to intercept short- and medium-range missile threats that will employ sophisticated warheads. THAAD is projected to transition from the MDA to the Army in FY06. The total requirement for procurement of THAAD is estimated at $6.9B, and the Army expects that this funding will be transferred to it when the program transitions in 2006. The Army currently has no funding allocated for THAAD procurement.

Deny the Enemy Sanctuary. The presence of Future Force leaders and Soldiers, dispersed across the battlespace, yet operationally integrated through an information network, provides the JFC with situational dominance in applying lethal and nonlethal effects with unprecedented precision, even in urban terrain.

Unmanned Aerial Vehicles (UAVs) consist of TUAV, Hunter UAV, extended range/multipurpose UAV and advanced payloads. The TUAV provides RSTA to the tactical maneuver commander. Currently, 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 TUAVs currently have an onboard EO/IR sensor payload. Objective payloads may include, but are not limited to advanced EO/IR, all-weather SAR and MTI, and SIGINT sensors. The threshold range is 50 km with and 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. Hunter UAV is the interim ER/MP UAV. It is the commander's RSTA and battle damage assessment asset providing ground forces with near real time imagery via EO/IR intelligence at ranges up to 200 km. This capability will be sustained until ER/MP is fielded for the UE. The ER/MP UAV is the Future Force RSTA and command, control, communications and intelligence (C3I) system, which will support the UE. Advanced payloads will provide a family of payloads to support RSTA for all commanders at all levels. Advanced payloads are planned to complement and enhance the capabilities of current EO/IR UAV sensors.

UAV ($M)	FY04	FY05	FY06	FY07	FY08	FY09	FY04-09
PB03 Data	190.3	145.5	260.2	254.7	223.0	227.0	1,300.8
PB04 Data	179.6	163.6	171.9	193.9	247.2	284.0	1,240.4
PB03/PB04 Delta	-10.7	18.1	-88.3	-60.8	24.2	57.0	-60.4
PB03 to PB04 % Growth	**-5.6%**	**12.4%**	**-33.9%**	**-23.9%**	**10.9%**	**25.1%**	**-4.6%**

Table B-11. Unmanned Aerial Vehicle (UAV) Program Summary

The **Guided Multiple Launch Rocket System (GMLRS)** is an international cooperation effort to produce a common product to achieve interoperability, while sharing and minimizing costs and risks. This program provides counterfire, suppression of enemy air defense (SEAD), and time-sensitive destruction of multiple types of targets. The improved accuracy of GMLRS results in a significant reduction in the quantity of rockets required to defeat the target (as much as a six-fold decrease at extended ranges). Other benefits include reduction in the logistics burden (transportation of rockets), reduced chances of collateral damage and fratricide, and reduced mission times (resulting in increased system survivability). This rocket will replace the aging M26 missile whose shelf life will expire in FY14. It is fully funded at $2B.

GMLRS ($M)	FY04	FY05	FY06	FY07	FY08	FY09	FY04-09
PB03 Data	85.1	103.2	99.4	89.4	91.0	93.0	561.1
PB04 Data	163.3	208.5	256.1	283.0	498.3	571.7	1,980.9
PB03/PB04 Delta	78.2	105.3	156.7	193.7	407.3	478.7	1,419.9
PB03 to PB04 % Growth	**91.9%**	**102.1%**	**157.7%**	**216.7%**	**447.6%**	**514.7%**	**253.1%**

Table B-12. Guided Multiple Launch Rocket System (GMLRS) Program Summary

The **Excalibur** program provides the maneuver force with an improved 155mm artillery projectile. This enhancement enables all-weather, day-and-night fire support through a precision-guided, extended-range, accuracy-enhancing, collateral-damage reducing, more lethal family of 155mm artillery projectiles. The unitary warhead will be used against various personnel, equipment, and building targets in urban or complex terrain. The program's requirements reflect a blocked strategy that will provide an initial capability to the LW155 Howitzers fielded to the Stryker Brigades.

Excalibur ($M)	FY04	FY05	FY06	FY07	FY08	FY09	FY04-09
PB03 Data	84.2	56.1	28.4	29.0	30.0	30.0	257.7
PB04 Data	134.0	143.4	163.8	172.2	245.7	321.1	1,180.3
PB03/PB04 Delta	49.8	87.3	135.5	143.2	215.7	291.1	922.6
PB03 to PB04 % Growth	**59.1%**	**155.7%**	**477.4%**	**493.4%**	**719.1%**	**970.4%**	**358.0%**

Table B-13. Excalibur Program Summary

The **Army Tactical Missile System (ATACMS)** is a family of long-range, all weather, day-and-night, tactical missiles that provides the JFC with a precision engagement capability at ranges from 35 to 300 km. The family contains a range of munitions, each fired from an MLRS or HIMARS.

ATACMS ($M)	FY04	FY05	FY06	FY07	FY08	FY09	FY04-09
PB03 Data	332.6	288.3	306.7	340.1	347.0	355.0	1,969.6
PB04 Data	105.8	130.3	141.2	133.8	135.1	42.0	688.2
PB03/PB04 Delta	-226.8	-158.0	-165.5	-206.3	-211.9	-313.0	-1,281.5
PB03 to PB04 % Growth	**-68.2%**	**-54.8%**	**-54.0%**	**-60.7%**	**-61.1%**	**-88.2%**	**-65.1%**

Table B-14. Army Tactical Missile System (ATACMS) Program Summary

The **Aerial Common Sensor (ACS)** is the Army-led, Joint airborne ISR system that meets both the Army's and Navy's requirements for a worldwide, self-deployable asset that can begin operations immediately upon arrival into theater. The ACS will operate alongside the Future Force in the JOA battlespace utilizing its multi-intelligence precision targeting capability. Using DCGS-A for the ground station component ensures the relevance of ACS throughout the entire spectrum of operations. ACS, via robust sensor-to-shooter and reachback links, will provide commanders at every echelon with the tailored, multisensor intelligence throughout a nonlinear framework and noncontiguous battlespace. Onboard battle command and communications relay packages will ensure uninterrupted, joint integrated C4I. Through a modular, open architecture, onboard COMINT, ELINT, imagery intelligence (IMINT), MASINT sensors, incorporating EO/IR, SAR, MTI, multi- and hyperspectral imagery sensors, as well as onboard operators, will ensure that sensor/processing technology enhancements maintain pace with evolving threats via software (vice hardware) solutions.

ACS ($M)	FY04	FY05	FY06	FY07	FY08	FY09	FY04-09
PB03 Data	83.5	93.4	80.4	104.2	106.0	109.0	576.5
PB04 Data	108.6	146.7	144.0	238.5	239.6	250.9	1,128.3
PB03/PB04 Delta	25.1	53.4	63.6	134.3	133.6	141.9	551.9
PB03 to PB04 % Growth	**30.0%**	**57.1%**	**79.2%**	**128.9%**	**126.0%**	**130.2%**	**95.7%**

Table B-15. Aerial Common Sensor (ACS) Program Summary

Conduct Information Operations. The Army's principal contribution to this critical goal is to provide adaptive Soldiers and leaders capable of rapidly assimilating and mastering evolving patterns of information. The Army effectively supports the Joint Force along three broad axes: 1) providing full-spectrum IO planning and execution embedded in dedicated force structure; 2) enabling decision superiority through real-time predictive understanding; and 3) embedding in the Future Force autonomous, self-synchronizing automated capabilities to frustrate an adversary's attack.

Information Operations (IO). Transformation funds support a transformed IO force structure and transformational IO technology that integrates traditionally separate military activities and capabilities, enabling success across the full range of operations. An emerging cadre of IO experts provides previously unrealized capabilities—synchronizing doctrinal and technological advancements in the areas of computer network operations, PSYOPS, electronic warfare, military deception, and operations security (OPSEC)—to create and preserve opportunities for decisive operations.

This cadre provides the Joint Force and future land component UE with adaptive Soldiers and leaders capable of rapidly assimilating and mastering the changing patterns of IO. The Army has programmed $562.1M for training support and operations as well as RC manpower.

Info Operations ($M)	FY04	FY05	FY06	FY07	FY08	FY09	FY04-09
PB03 Data	91.3	89.7	92.6	96.0	96.5	97.0	563.2
PB04 Data	90.4	88.9	91.3	94.6	97.2	99.7	562.1
PB03/PB04 Delta	-0.9	-0.9	-1.3	-1.4	0.7	2.7	-1.0
PB03 to PB04 % Growth	**-1.0%**	**-1.0%**	**-1.4%**	**-1.4%**	**0.7%**	**2.8%**	**-0.2%**

Table B-16. Information Operations (IO) Program Summary

Space Systems and Infrastructure. While not the DOD proponent for space, the Army is, and will remain, the largest user among the Services of space-based capabilities. The Army has already begun to leverage many of its space systems in the Current Force. The Army's space systems include the following efforts. The GPS upgrade is a key Transformation enabler, with central enhancements for Future Force capabilities including blue force tracking, UAV, UGV, and precision weapon navigation. Ground terminals and control equipment for SATCOM systems provide critical connectivity for a rapidly deployable, information-enabled Army, and will work with both the current DSCS satellites as well as the new generation of wideband gapfiller satellites. The Joint Tactical Ground Station (JTAGS) upgrade will exploit the next generation infrared sensor, using the Multi-Mission Mobile Processor (M3P), an essential element of the Future Force missile defense. The tactical intelligence and exploitation effort is central to the lifeblood of the future force, information exploitation. High Energy Laser Technology weapons development, beyond the current MTHEL, will allow precision attack on individual components of weapon systems. Space Technology Integration (STI) programs are developing the next generation of overhead sensors supporting the Future Force's ISR capabilities, exploiting spectral imaging to ensure information dominance.

Space ($M)	FY04	FY05	FY06	FY07	FY08	FY09	FY04-09
PB03 Data	223.7	234.6	220.5	214.1	214.1	214.1	1,321.1
PB04 Data	256.1	281.1	250.6	250.9	251.9	250.0	1,540.6
PB03/PB04 Delta	32.5	46.5	30.1	36.8	37.8	35.9	219.6
PB03 to PB04 % Growth	**14.5%**	**19.8%**	**13.7%**	**17.2%**	**17.6%**	**16.8%**	**16.6%**

Table B-17. Space Systems Program Summary

Leverage Information Technology. Future Force units will see first by detecting, identifying, and tracking the individual components of enemy units. They will employ advanced technologies coupled with a ubiquitous array of networked ground, air and space sensors to offer the commander an unprecedented picture of the battlefield through the Common Relevant Operational Picture (CROP).

The **Warfighter Information Network-Tactical (WIN-T)** is the key enabler to execute the network-centric warfare capability of the Army's Future Force. WIN-T is the Future Force's new-

start tactical digital communications system that will provide advanced commercial-based networking capabilities to the warfighter. WIN-T will replace current Army Mobile Subscriber Equipment (MSE) and Tri-Services Tactical Communications (TRI-TAC) systems, which are based on 1970s technology. The Defense Acquisition Executive (DAE) approved the Army's request for a Block I Milestone B decision on 6 August 2003. Additional funding will be applied in the PB05 submission.

WIN-T ($M)	FY04	FY05	FY06	FY07	FY08	FY09	FY04-09
PB03 Data	43.9	123.5	172.6	129.4	132.0	135.0	736.5
PB04 Data	85.5	68.5	175.6	128.4	277.9	305.4	1,041.3
PB03/PB04 Delta	41.6	-55.1	2.9	-1.0	145.9	170.4	304.8
PB03 to PB04 % Growth	**94.8%**	**-44.6%**	**1.7%**	**-0.8%**	**110.5%**	**126.2%**	**41.4%**

Table B-18. Warfighter Information Network-Tactical (WIN-T) Program Summary

The **Joint Tactical Radio System (JTRS)** is a communications system for all DOD components—not a one-size-fits-all system; rather, it is a family of systems that are interoperable, affordable, and scaleable. It provides software-programmable, multiband/multimode, multichannel, modular, networked communications for simultaneous voice, data, and video and the data backbone for the tactical Internet.

JTRS ($M)	FY04	FY05	FY06	FY07	FY08	FY09	FY04-09
PB03 Data	207.4	204.2	211.8	172.0	176.0	179.0	1,150.5
PB04 Data	393.2	419.3	309.3	248.1	180.1	159.3	1,709.3
PB03/PB04 Delta	185.8	215.1	97.5	76.1	4.1	-19.7	558.8
PB03 to PB04 % Growth	**89.6%**	**105.3%**	**46.0%**	**44.2%**	**2.3%**	**-11.0%**	**48.6%**

Table B-19. Joint Tactical Radio System (JTRS) Program Summary

The **Soldier Modernization** program provides mission-enhancing capabilities and life support for all Soldiers. Included in this program is Land Warrior, which is the first program to integrate the infantry Soldier's combat capabilities into a warfighting system. It increases the Soldier's mobility, lethality, survivability, and tactical awareness through the integration of lasers, thermals, aiming devices, communication links, navigation systems, and video display.

Soldier Mod ($M)	FY04	FY05	FY06	FY07	FY08	FY09	FY04-09
PB03 Data	265.2	283.5	310.4	311.7	319.0	326.0	1,815.9
PB04 Data	263.8	284.8	311.6	425.9	355.2	357.2	1,998.5
PB03/PB04 Delta	-1.5	1.3	1.2	114.1	36.2	31.2	182.6
PB03 to PB04 % Growth	**-0.6%**	**0.4%**	**0.4%**	**36.6%**	**11.4%**	**9.6%**	**10.1%**

Table B-20. Soldier Modernization Program Summary

Network-centric Information Warfare requires systems that support the integrity, availability, authenticity, confidentiality, and nonrepudiation of information. The Army has several information assurance programs such as the Information Systems Security Program (ISSP), Information Dominance Center, Land Information Warfare Activity (LIWA), Global Network Monitoring, and Army Electronic Commerce. Together, these programs enhance the sharing of information among geographically distributed forces, sensors, decision makers, and shooters. The Army continued its commitment to funding these programs at $1.6B.

Net Centric Warefare ($M)	FY04	FY05	FY06	FY07	FY08	FY09	FY04-09
PB03 Data	221.6	225.7	231.3	252.5	228.0	234.0	1,393.0
PB04 Data	313.9	308.2	272.4	259.3	256.0	261.7	1,671.6
PB03/PB04 Delta	92.3	82.5	41.1	6.8	28.0	27.7	278.5
PB03 to PB04 % Growth	**41.7%**	**36.6%**	**17.8%**	**2.7%**	**12.3%**	**11.9%**	**20.0%**

Table B-21. Network-centric Information Warfare Program Summary

The **Distributed Common Ground System-Army (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 and interoperable, multi-intelligence architecture to improve the ground commander's ability to react within the enemy's decision cycle. DCGS-A software/hardware used throughout the Army and joint environment will task, process, exploit, and disseminate Army, joint, national, and coalition ISR sensor data and information in support of Future Force and Joint Task Force operations. Fixed and mobile DCGS-A transparently operates with embedded DCGS-A software applications within the FCS while 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 ($M)	FY04	FY05	FY06	FY07	FY08	FY09	FY04-09
PB03 Data	18.7	18.5	46.5	78.7	78.7	78.7	319.8
PB04 Data	35.8	53.6	99.2	138.0	147.8	152.9	627.3
PB03/PB04 Delta	17.1	35.1	52.7	59.3	69.1	74.2	307.5
PB03 to PB04 % Growth	**91.4%**	**189.7%**	**113.3%**	**75.3%**	**87.8%**	**94.3%**	**96.2%**

Table B-22. Distributed Common Ground System-Army (DCGS-A) Program Summary

Experimentation and Simulation. Although not critical operational goals, experimentation and simulation are considered transformational by OSD(PAE) and are counted in transformation programmatics. Army experiments, demonstrations and simulations provide critical insights for the rapid development and fielding of new systems and capabilities. These activities provide valuable input to transforming the way the Army organizes, equips, trains, and fights. Advanced model

development and simulation of sensors, digitization, and other critical technologies significantly increase the reliability of the data and information on which key program funding and development decisions are made and open the door to accelerated procurement and fielding of new systems. Modeling, simulation, and experimentation are shaping Future Force requirements and capabilities, while robust joint live experimentation is critical to validating and refining equipment and technological solutions. Included in these Army experiments are battle labs and participation in the Joint Experimentation Campaign Plan—Millennium Challenge.

Experimentation ($M)	**FY04**	**FY05**	**FY06**	**FY07**	**FY08**	**FY09**	**FY04-09**
PB03 Data	380.0	378.0	417.9	426.5	303.0	310.0	2,215.4
PB04 Data	352.8	361.4	438.5	450.0	490.9	495.1	2,588.8
PB03/PB04 Delta	-27.2	-16.6	20.7	23.6	187.9	185.1	373.4
PB03 to PB04 % Growth	**-7.2%**	**-4.4%**	**4.9%**	**5.5%**	**62.0%**	**59.7%**	**16.9%**

Table B-23. Experimentation and Simulation Program Summary

MEASURING ARMY TRANSFORMATION—THE STRATEGIC READINESS SYSTEM(SRS) C

Transformation inevitably requires trading off near-term possibilities for long-term gain. Responsible leaders must therefore consider, first, whether the long-term gains are worth the short-term trade-offs, and second, whether short-term actions accelerate or impede the attainment of long-term goals. The Army's current readiness system provides, at best, lagging indicators of operational units' ability to perform their specified, current missions. It provides little insight into the Army's comprehensive ability to organize, train and equip land forces for prompt and sustained combat, and no insight into the force's ability to execute that mission in the future.

For that reason, the Army is implementing SRS, which employs the balanced scorecard methodology as a tool to link resources to readiness and to translate strategy into measurable objectives.[24] The Army recently completed macro-level measures, combined with lagging and leading indicators for their achievement, for the comprehensive assessment and prediction of

ARMY STRATEGY MAP—STRATEGIC READINESS SYSTEM (SRS)

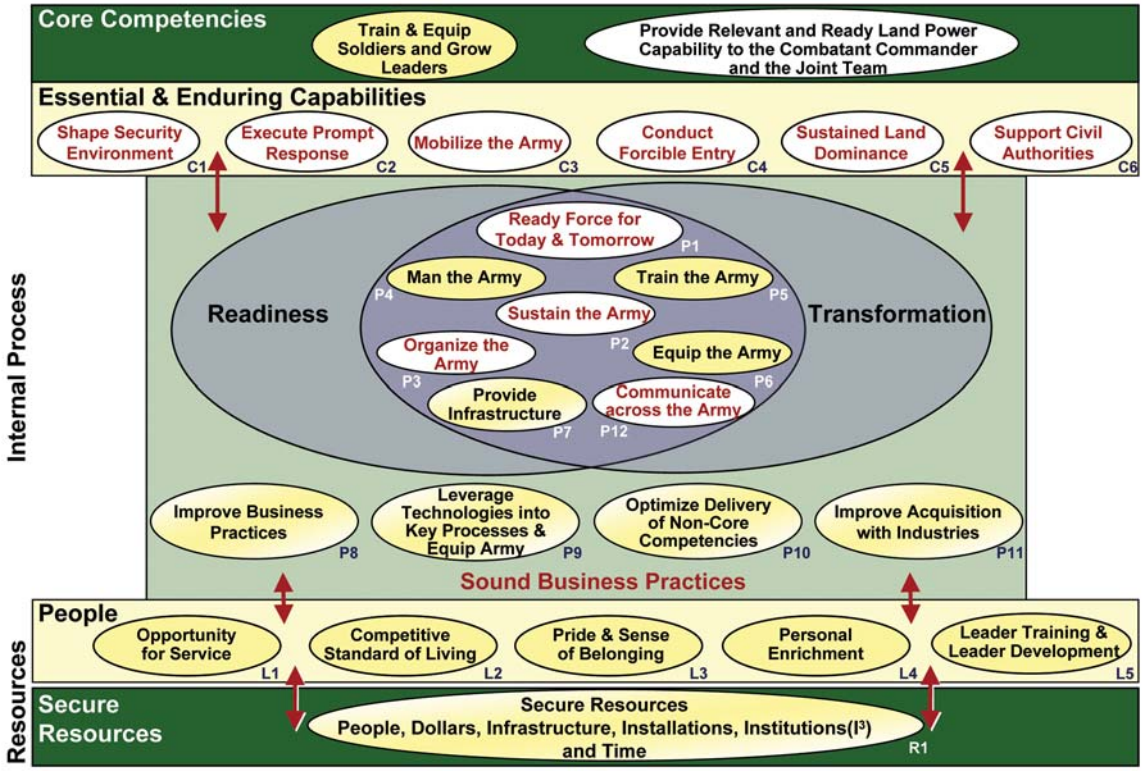


Figure C-1. Army Strategy Map—Strategic Readiness System (SRS)

[24] A complete description of the Strategic Readiness System will be found in the Strategic Readiness System Implementing Instructions currently going through the publication process.

the Army's comprehensive readiness. The major objectives, major decisions, subordinate objectives, synchronizing intermediate objectives and tasks of the TCP provide leading and lagging indicators at all levels of the Army scorecard: core competencies, essential and enduring capabilities, internal processes, people, and securing resources. Currently, transformation-related metrics include:

- Army essential and enduring capabilities: C1 to C6 are strategic objectives, while a through d are associated measures within each strategic objective.
  - C1-a: Capability of the transforming Army to fulfill key security cooperation requirements
  - C1-b: Degree to which security cooperation requirements are recognized in Army PPBES and fulfill Defense, Army, and statutory requirements
  - C2-a: Percent availability of designated units organized and resourced to complete deployment and be operationally employable within specified timelines
  - C2-b: Percent projected readiness of associated Current Force combat and support units based on the Army Transformation Campaign Plan
  - C2-c: Percent projected readiness of associated Future Force combat and support units based on the Army Transformation Campaign Plan
  - C3-a: Percent Power Projection Platforms (PPP)/Power Support Platforms (PSP) installations meet current and future throughput requirements
  - C3-b: Percent capability of current institution training base to expand to meet the mobilization requirement
  - C3-c: Percent validated funding provided to the RC for DMOSQ mobilization requirements
  - C4-a: Percent availability of designated Army units organized and resourced to execute deployment from strategic distances into a contested area and employ the required level of combat power in a forced-entry operation
  - C4-b: Percent availability of Army special operations/special purpose units organized and resourced to conduct strike operations in support of forced entry operations
  - C4-c: Percent projected readiness of associated current force combat and support units based on the Army Transformation Campaign Plan
  - C4-d: Percent projected readiness of associated future force combat and support units based on the Army Transformation Campaign Plan
  - C5-a: Percent of designated combat forces, including associated combat support forces, available for deployment/employment within 30/60/90/150 days
  - C5-b: Percent availability of designated CSS units resourced to complete deployment and be operational within specified timelines
  - C5-c: Percent projected readiness of associated current force combat and support units based on Army Transformation Campaign Plan
  - C5-d: Percent projected readiness of associated future force combat and support units based on Army Transformation Campaign Plan
  - C6-a: Degree to which subordinate Military Support to Civil Authorities (MSCA) tasks are planned, trained, and executed
  - C6-b: Percent of designated Emergency Preparedness Liaison Officers (EPLO) trained in MSCA

- Army Internal Processes:
  - P2-a: Percent progress toward developing a more broad metric to assess industrial base health versus surge capability
  - P3-a: Percent of units organized and structured in accordance with the Transformation Campaign Plan
  - P3-b: Percent of brigades resourced to meet transformation requirements
  - P4-a: Current and projected (2008 and 2015) percent of fiscal year manning program achieved measured in terms of end strength (AC, USAR, ARNG, and DAC)
  - P4-b: Current and projected (2008 and 2015) percent fill of Divisions, armored cavalry regiments (ACRs) and Early Deploying Units (EDUs) in the aggregate (AC, USAR, and ARNG)
  - P5-c: Percent validated training requirements that are funded to transform the Army's training capability
  - P6-b: Percent of acquisition programs which support the Current and Future Forces that are on schedule
  - P6-c: Percent Total Army equipment (Current and Future Forces) on hand status/ readiness
- People: Percent of recommendations from the Army Training and Leader Development Integrated Process Action Team (IPAT) completed

These competencies, capabilities, strategic objectives and measures begin to assess progress in achieving the transformational goals that support emerging joint concepts.

GLOSSARY D

WORD	DEFINITION
battlespace awareness	The Battlespace Awareness Functional Concept focuses on the ability of joint force commanders and all force elements to understand the environment in which they operate and the adversaries they face. In the future, efforts to create superior battlespace awareness will involve a constellation of highly responsive sensors providing persistent coverage of adversary targets. A producer interactive network, continuously synchronized with operations, will enable users to subscribe to both real-time and archived fused data. Advanced fusion and assessment capabilities will help provide friendly forces with an understanding of the adversary's capabilities, enabling commanders to make operational decisions more efficiently by providing actual and predictive cognizance. (Functional Concept for Battlespace Awareness Draft, 5 September 2003 description).
command and control	The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission. Also called C2. (*Joint Publication 1-02*, 12 April 2001 as amended 5 June 2003).
focused logistics	The Focused Logistics Functional Concept seeks to build sufficient *capacity* into the future U.S. deployment and sustainment pipeline, to exercise *control* over the pipeline from end to end, and to provide *certainty* to the supported joint force commander that forces, equipment, sustainment, and support will arrive on time. The concept describes a comprehensive, integrated approach for fundamentally improving the way logistics functions will be performed in order to dramatically improve the timeliness and quality of logistics support.

WORD	DEFINITION
force application	The military function of force application is the synergistic and integrated combination of maneuver and fires directed against an adversary to create the effects necessary to enable mission accomplishment. The Force Application Functional Concept describes force application capabilities desired in the Future Joint Force. This includes how maneuver and fires (including offensive information operations) contribute to the joint force and enable the joint force commander to achieve joint or coalition objectives. Also called FA. (Force Application Functional Concept, 5 September 2003 Draft description).
joint command and control	The Joint Command and Control Functional Concept focuses on the future performance of command and control functions by the joint force across the range of military operations by fully exploiting and dynamically integrating the technical, organizational and cognitive aspects of command and control. The performance of this function will be based upon the ability to continually address the needs of changing situations and missions by dynamically linking the collaborative functions within and across these three areas. Also called JC2. (Joint Command and Control Functional Concept Draft, 5 September 2003 definition).
Joint Force	The term "Joint Force" (upper case) in its broadest sense refers to the Armed Forces of the United States. While this document focuses primarily on the changes in the way that operating elements of the Armed Forces will organize, plan and prepare, and operate as an integrated joint force in the future, these changes will impact every element of the Armed Forces.
joint force	The term "joint force" (lower case) refers to an element or elements of the Armed Forces organized for a particular mission or task. Since this could refer to a joint task force or a unified command, or some yet unnamed future joint organization, the more generic term "a joint force" will be used, similar in manner to the term "joint force commander" in reference to the commander of any joint force.
Joint Functional Concepts	An articulation of how a future joint force commander will integrate a set of related military tasks to attain capabilities required across the range of military operations.

WORD	DEFINITION
joint operations area	An area of land, sea and airspace, defined by a geographic combatant commander or subordinate unified commander, in which a joint force commander (normally a joint task force commander) conducts military operations to accomplish a specific mission. Joint operations areas are particularly useful when operations are limited in scope and geographic area or when operations are to be conducted on the boundaries between theaters. Also called JOA. (*Joint Publication 1-02*, 12 April 2001 as amended 5 June 2003).
protection	Protection is the ability of the joint force to protect the personnel (combatant/noncombatant) and physical assets required to ensure the force's fighting potential can be applied at the decisive time and place against the full spectrum of threats. It is achieved through the tailored selection and application of multilayered, active and passive, lethal and nonlethal measures within air, land, sea, space, and cyber domains across the range of military operations based on risk assessment. It is imperative that protection of the joint force exists throughout the global battlespace against both state and nonstate aggressors. Protection must be accomplished from deploying (point-of-origin, through transit, and into theater), through employing, sustaining, and, then, during redeployment. The goal is to prevent the enemy from employing capabilities against the joint force that would restrict, or prevent, the joint force from achieving decisive results at a time and place of the U.S. leadership's choosing. Protection must allow for continuous operations in support of the JFC's intent (Protection Joint Functional Concept Draft, 5 September 2003 description).
transformation	Transformation is "a process that shapes the changing nature of military competition and cooperation through new combinations of concepts, capabilities, people and organizations that exploit the Nation's advantages, and protect against our asymmetric vulnerabilities to sustain our strategic position, which helps underpin peace and stability in the world." (*Transformation Planning Guidance*, April 2003)

ACRONYMS E

ACRONYM	DEFINITION
A/SPOD	aerial/seaport of debarkation
AAO	Army's Acquisition Objective
ABCA	American, British, Canadian, Australian Armies Standardization Program
ABCS	Army Battle Command Systems
ABT	air-breathing threat
AC	Active Component
ACR	armored cavalry regiment
ACS	Aerial Common Sensor
ACSIM	Assistant Chief of Staff for Installation Management
ACTD	Advanced Concept and Technology Demonstration
ADTS	Army Digital Training Strategy
AEADP	Army Enterprise Architecture Deployment Plan
AEI	Army Enterprise Infrastructure
AFATDS	Advanced Field Artillery Tactical Data System
AFCS	Automatic Fire Control System
AGRI	Army-Guard Restructure Initiative
AIAP	Army International Activities Plan
AKE	Army Knowledge Enterprise
AKEA	Army Knowledge Enterprise Architecture
AKM	Army Knowledge Management
AKO	Army Knowledge Online
ALE	Army Logistics Enterprise
AMC	Army Materiel Command
AMD	air and missile defense
AMI	Adaptive Medical Increments
AMP	Aviation Modernization Plan
ANA	Afghanistan National Army

ACRONYM	DEFINITION
AOR	area of responsibility
AOT	Assignment-Oriented Training
APS	Army pre-positioned stocks
AR	Army Regulation
ARL	Automotive Reconnaissance-Low
ARF	Army Regional Flotilla
ARFOR	Army Forces
ARNG	Army National Guard
ASCC	Army Service Component Command
ASD-NII	Assistant Secretary of Defense for Network and Information Integration
ATACMS	Army Tactical Missile System
AT-CDEP	Army Transformation Concept Development and Experimentation Campaign Plan
ATCP	Army Transformation Campaign Plan
ATEC	U.S. Army Test and Evaluation Command
ATGM	Antitank Guided Missile
ATR	Army Transformation Roadmap
BA	battlespace awareness
BAFC	Battlespace Awareness Functional Concept
BCOTM	battle command on-the-move
BCP	Battle Command Post
BCS	Battle Command System
BCS3	Battle Command Sustainment Support System
BCTP	Battle Command Training Program
BDA	battle damage assessment
BLCSE	Battle Lab Collaborative Simulation Environment
BLOS	beyond-line-of-sight
BM/C2	Battle Management/Command and Control
BMC4I	Battle Management Command, Control, Communications, Computers, and Intelligence
BMDS	Ballistic Missile Defense System
BMMP	Business Management Modernization Program

ACRONYM	DEFINITION
BOLC	Basic Officer Leader Course
C2	command and control
C2I	command, control, and intelligence
C3	command, control, and communications
C3I	command, control, communications, and intelligence
C4	command, control, communications, and computers
C4/IM	command, control, communications, and computers/information management
C4I	command, control, communications, computers and intelligence
C4ISR	command, control, communications, computers, intelligence, surveillance, and reconnaissance
CAD	Component Advanced Development
CAIG	Cost Analysis Improvement Group
CBRNE	chemical, biological, radiological, nuclear and high yield explosives
CDE	Concept Development and Experimentation
CEP	circular error probable
CI	counterintelligence
CIO	Chief Information Officer
CJCSI	Chairman of the Joint Chiefs of Staff Instruction
CLOE	Common Logistics Operating Environment
CLS	Combat Logistics System
CM	countermines
CMTC	Combat Maneuver Training Center
COG	Continuity of Government
COGs	Critical Operational Goals
COMINT	communications intelligence
CONUS	continental United States
CONUSA	continental United States Army
COP	Continuity of Operations
COP	common operational picture
COTS	commercial off-the-shelf
CROP	Common Relevant Operational Picture
CS	Civil Support

ACRONYM	DEFINITION
CSS	combat service support
CT	counterterrorism
CTS	common training scenario
CV	Commander Vehicle
DA Civilian	Department of the Army Civilian
DAB	Defense Acquisition Board
DAC	Department of the Army Civilian
DAE	Defense Acquisition Executive
DARPA	Defense Advanced Research Projects Agency
DOCEX	document exploitation
DITSCAP	DOD Information Technology Security Certification and Accreditation Process
DBL	distribution-based logistics
DCEE	Distributed Continuous Experimentation Environment
DCGS-A	Distributed Common Ground System-Army
DES	deployed, employ and sustain
DF	deuterium fluoride
DIA	Defense Intelligence Agency
DIME	diplomatic, information, military and economic
DIMHRS	Defense Integrated Military Human Resource System
DOD	Department of Defense
DOTMLPF	Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities
DPG	Defense Planning Guidance
DSP	Defense Support Program
DT	Developmental Testing
DTI	Doctrine Taxonomy Initiative
EAC	echelon above corps
EAL	East Asian Litorals
EBO	Effects Based Operations
EDU	early deploying units
eHRS	electronic Human Resource System

ACRONYM	DEFINITION
ELINT	electronic intelligence
EMD	engineering and manufacturing development
EMPR	en route mission planning and rehearsal
EO	electro-optical
EOD	explosive ordnance disposal
EP	Emergency Preparedness
EPLO	Emergency Preparedness Liaison Officers
ERMP	extended range multipurpose
ERP	Enterprise Resource Planning
ESV	Engineer Squad Vehicle
ETA	Enable Theater Access
ETRAC	Enhanced Target Range and Classification
FA	force application
FAAD	Forward Area Air Defense
FAASV	Field Artillery Ammunition Supply Vehicle
FBCB2-BFT	Force XXI Battle Command Brigade and Below-Blue Force Tracking
FCP	force capability packages
FCS	Future Combat Systems
FID	foreign internal defense
FLE	Future Logistics Enterprise
FMTV	Family of Medium Tactical Vehicles
FOC	full operational capability
FORSCOM	United States Army Forces Command
FoS	family of systems
FSUMS	Force Stabilization and Unit Manning System
FSV	Fire Support Vehicle
FTTS	Future Tactical Truck System
FUE	first unit equipped
FWSP	Future Warfare Study Plan
FY	fiscal year
FYDP	Future Years Defense Program
G&C	Guidance and Control

ACRONYM	DEFINITION
GBI	Ground-based Interceptor
GBMC3	Battle Management Command, Control and Communications
GCS	ground control station
GCSS-A	Global Combat Service Support-Army
GES	Global Enterprise Services
GIG	Global Information Grid
GMD	Ground-based Midcourse Defense
GMI	general military intelligence
GMLRS	Guided Multiple Launch Rocket System
GPS	global positioning system
GRCS	Guardrail Common Sensor
GSE	Ground Support Equipment
GSIE	Ground Systems Industrial Enterprise
GSTAMIDS	Ground Standoff Mine Detection System
GTMO	Guantanamo Bay
GWOT	Global War on Terrorism
HD	Homeland Defense
HD/LD	High Demand/Low Density
HEL	high energy laser
HIMARS	High Mobility Artillery Rocket
HLD	Homeland Defense
HLS	Homeland Security
HLS JOC	Homeland Security Joint Operating Concept
HLVTOL	heavy-lift vertical take-off and landing
HMMWV	High Mobility Multipurpose Wheeled Vehicle
HOSP	Hospital Optimization and Standardization Program
HQ	Headquarters
HQDA	Headquarters, Department of the Army
HRC	Human Resource Command
HSOC	Home Station Operations Centers
HSTAMIDS	Handheld Standoff Minefield Detection System
HTL	human-in-the-loop

ACRONYM	DEFINITION
HUMINT	human intelligence
I&W	indications and warning
I3MP	Installation-Information Infrastructure Modernization Program
IADS	Integrated Air Defense Systems
IC	initial capability
ICV	Infantry Carrier Vehicle
IDG	Installation Design Guides
IDO	Initial Defense Operations
IDS	Installation Design Standards
IFF	identification, friend or foe
IFICS	In-Flight Interceptor Communications System
IMA	Installation Management Agency
IMINT	imagery intelligence
INSCOM	Intelligence and Security Command
IO	Information Operations
IOC	initial operational capability
IPAT	Integrated Process Action Team
IPT	Integrated Product Team
IR	infrared
IS	information superiority
ISR	intelligence, surveillance, and reconnaissance
ISSP	Information Systems Security Program
IST	Installation Support Team
IT	information technology
ITV	in transit visibility
JBMC2	Joint Battle Management Command and Control
JBSDS	Joint Biological Standoff Detection System
JC2	Joint command and control
JCDE	Joint Concept Development and Experimentation
JCIDS	Joint Capabilities and Integration Development System
JCS	Joint Chiefs of Staff
JE	Joint Experimentation

ACRONYM	DEFINITION
JEAC	Joint Assessment and Enabling Capability
JFC	joint force commander
JFCOM	Joint Forces Command
JFLCC	Joint Force Land Component Command
JFLCC	Joint Force Land Component Commander
JFRG II	Joint Force Requirements Generator II
JIACG	Joint Interagency Coordination Group
JLC	joint logistics command
JLCE	Joint Logistics Corporate Enterprise
JLENS	Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System
JLOTS	Joint Logistics Over the Shore
JNTC	Joint National Training Capability
JOA	Joint Operations Area
JOC	Joint Operating Concepts
JOE	joint operational environment
JOPES	Joint Operation Planning and Execution System
JOpsC	Joint Operations Concepts
JP 1-02	Joint Publication 1-02
JRAC	Joint Rapid Airfield Construction
JROC	Joint Requirements Oversight Council
JRSC	Joint Regional Support Command
JRTC	Joint Readiness Training Center
J-SEAD	joint suppression of enemy air defenses
JSIPP	Joint Services Installation Pilot Program
JTA-A	Joint Technical Architecture-Army
JTAGS	Joint Tactical Ground Station
JTAMD	joint theater air and missile defense
JTAMDO	Joint Theater Air and Missile Defense Organization
JTF	Joint Task Force
JTF-CM	Joint Task Force Consequence Management
JTRS	Joint Tactical Radio System
JTS	Joint Training System

ACRONYM	DEFINITION
KC	Knowledge Center
KFOR	Kosovo Peacekeeping Force
KPP	key performance parameters
LACM	Land Attack Cruise Missiles
LCOP	Logistics Common Operating Picture
LFA	Lead Federal Agencies
LIWA	Land Information Warfare Activity
LMP	Logistics Modernization Program
LOS	line-of-sight
LRAS3	Long Range Advanced Scout Surveillance System
LRIP	low-rate initial production
LVC	Live, Virtual, Constructive
LW	Land Warrior
M&S	modeling and simulation
M3P	Multi-Mission Mobile Processor
MACA	Military Assistance to Civil Authorities
MACDIS	Military Assistance for Civil Disturbances
MACOM	Major Army Command
MASINT	measurement and signature intelligence
MAV	Micro Aerial Vehicle
MC	Mortar Carrier
MC4	Medical Communications for Combat Casualty Care
MCO	Major Combat Operations
MCO JOC	Major Combat Operations Joint Operating Concept
MDA	Missile Defense Agency (formerly BMDO)
MDM	Master Data Management
MEADS	Medium Extended Air Defense System
MEI	major end items
MEV	Medical Evacuation Vehicle
MFD	Multi-functional Divisions
MFO	Multinational Force Observers
MGS	Mobile Gun System

ACRONYM	DEFINITION
MID	Management Initiative Decision
MILCON	military construction
MLB	Mobile Light Brigades
MLRS	Multiple Launch Rocket System
MOUT	Military Operations in Urban Terrain
MRI	Medical Reengineering Initiative
MSCLEA	Military Support to Civilian Law Enforcement Agencies
MSCA	Military Support to Civil Authorities
MSE	Mobile Subscriber Equipment
MTHEL	Mobile Tactical High Energy Laser
MTI	moving target indicator
MTOE	modification table of organization and equipment
MTP	mission training plan
MTS	Movement Tracking System
NATO	North Atlantic Treaty Organization
NetOps	Network Operations
NBC	nuclear, biological, and chemical
NBCRV	Nuclear, Biological and Chemical Reconnaissance Vehicle
NCES	Network-Centric Enterprise Services
NCIE	network collaborative information environment
NCO	Noncommissioned Officer
NGIC	National Ground Intelligence Center
NGO	nongovernmental organization
NIMA	National Imaging and Mapping Agency
NLOS	non-line-of-sight
NLOS-LS	NLOS-Launch System
NMS	National Military Strategy
NORTHCOM	United States Northern Command
NSA	National Security Agency
NSS	National Security Strategy
NSS	National Security Systems
NTC	National Training Center

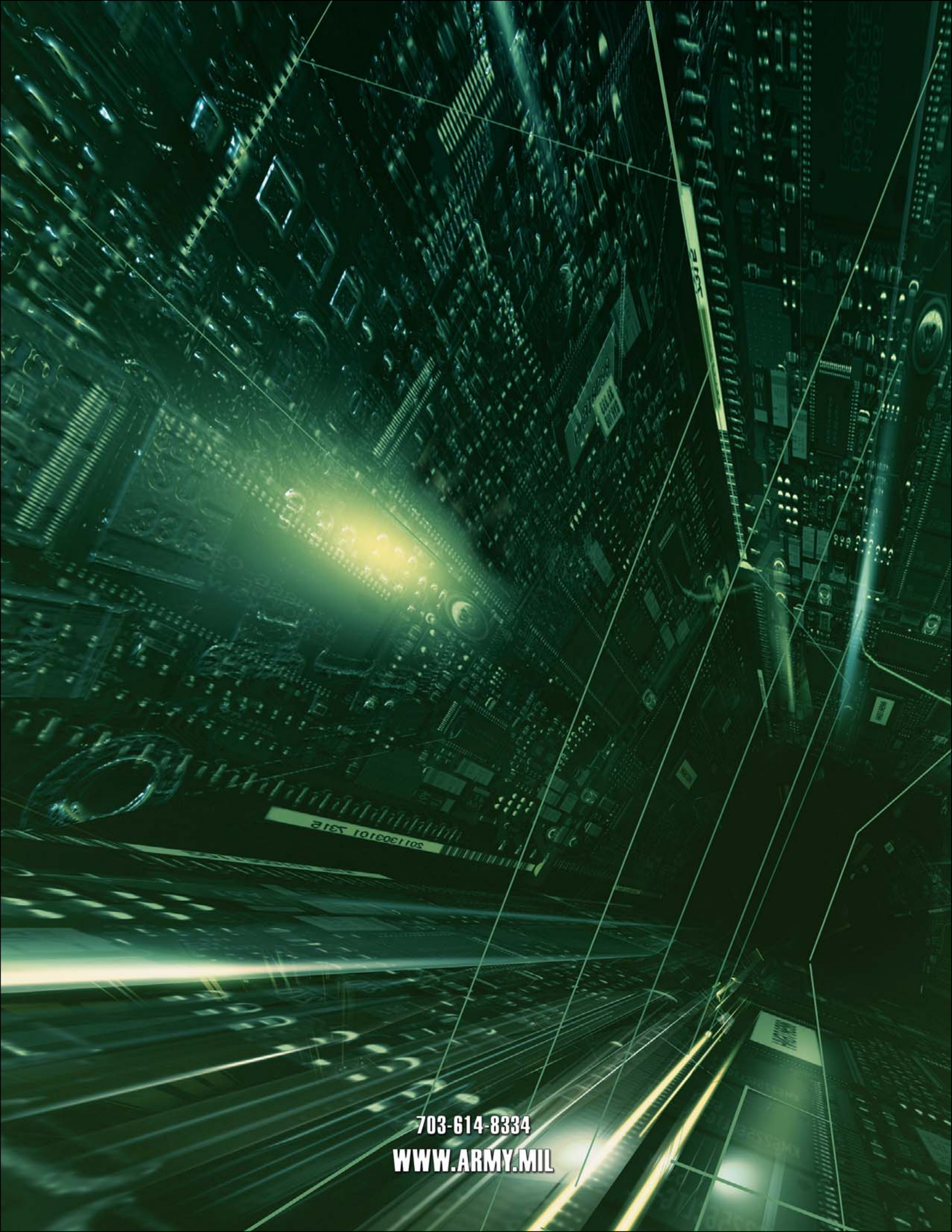
ACRONYM	DEFINITION
O&M	operation and maintenance
O&O	organizational and operational
OCONUS	outside the continental United States
OE	operational environment
OEF	Operation Enduring Freedom
OEM	Original Equipment Manufacturer
OIF	Operation Iraqi Freedom
OMFSD	operational maneuver from strategic distances
ONA	operational net assessment
OPSEC	operations security
ORD	Operational Requirements Document
OSD	Office of the Secretary of Defense
OSD(PAE)	Office of the Secretary of Defense (Program Analysis and Evaluation)
OSINT	Open source intelligence
OT	operational testing
OTH	over-the-horizon
P3I	Preplanned Product Improvement
PAC-3	Patriot Advanced Capability-3
PASR	personnel accounting and strength reporting
PB04	President's Budget FY04
PBA	Performance-Based Agreement
PBL	Performance-Based Logistics
PCP	Program Change Proposals
PDFCS	Paladin Digital Fire Control System
PEGASYS	Precision, Extended Glide Airdrop System
PGMM	Precision Guided Mortar Munition
PLM	Product Life Cycle Management
PLM+	Product Life Cycle Management Plus
PM	Program Manager
PME	Professional Military Education
POD	port of debarkation
POE	Posture of Engagement

ACRONYM	DEFINITION
POM	Program Objective Memorandum
PPP	Power Projection Platforms
PREPO	Army Pre-positioned Stocks Evolution
PSD	Power Support Platforms
PSI	Product Support Integrator
PSYOP	psychological operations
QDR	Quadrennial Defense Review
R&S	reconnaissance and surveillance
RAID	Rapid Aerostat Initial Deployment
RAM	rocket, artillery and mortar
RC	Reserve Component
RCI	Residential Communities Initiative
RDA	research, development, and acquisition
RDE	Research, Development and Engineering
RD&E	research, development, and evaluation
RDT&E	research, development, test and evaluation
RF	radio frequency
RISTA	reconnaissance, intelligence, surveillance, and target acquisition
ROE	rules of engagement
RPE	Rapid Port Enhancement
RPG	rocket-propelled grenades
RRT	Regional Response Team
RSTA	reconnaissance, surveillance, and target acquisition
RTF	Response Task Force
RV	Reconnaissance Vehicle
S&T	science and technology
S&TI	scientific and technical intelligence
SaaS	Soldier as a System
SALE	Single Army Logistics Enterprise
SAP	special access program
SAR	synthetic aperture radar
SASO	support and stability operations

ACRONYM	DEFINITION
SATCOM	satellite communications
SAV	Styker Armored Vehicle
SBCT	Stryker Brigade Combat Team
SBIRS	Space-Based Infrared System
SD	Strategic Deterrence
SD JOC	Strategic Deterrence Joint Operating Concept
SDD	System Development and Demonstration
SDHSS	shallow draft, high-speed ships
SDTE	Swiftly Defeat the Effort
SEAD	suppression of enemy air defense
SECDEF	Secretary of Defense
SFOR	Stabilization Force
SHORAD	Short Range Air Defense
SIAP	Single Integrated Air Picture
SIGINT	signals intelligence
SJFHQ	Standing Joint Force Headquarters
SLAMRAAM	Surface Launched Advanced Medium Range Air to Air Missile
SMART	Simulation and Modeling for Acquisition, Requirements, and Training
SO	Stability Operations
SO JOC	Stability Operations Joint Operating Concept
SOF	special operations forces
SoS	system of systems
SPOD	seaport of debarkation
SRBM	short-range ballistic missiles
SRS	Strategic Readiness System
SSTOL	super-short take-off and landing
STI	Space Technology Integration
STO	special technical operations
SU	situational understanding
SUAV	small unmanned aerial vehicle
SWA	Southwest Asia
SWB	software blocking process

ACRONYM	DEFINITION
T&E	test and evaluation
TACOM	Tank-automotive and Armaments Command
TAP	The Army Plan
TBM	tactical/theater ballistic missiles
TC-AIMS II	Transportation Coordinators' Automated Information for Movement System II
TCP	Transformation Campaign Plan
TF-E	Task Force East
TF-W	Task Force West
THAAD	Theater High Altitude Area Defense
TIM	toxic industrial materials
TLCSM	Total Life Cycle Systems Manager
TMD	theater missile defense
TPED	tasking, processing, exploiting, and disseminating
TPG	Transformation Planning Guidance
TPPU	tasking, processing, posting, and using
TRAC	U.S. Army TRADOC Analysis Center
TRADOC	U.S. Army Training and Doctrine Command
TRI-TAC	Tri-Services Tactical Communications
TSCP	Theater Security Cooperation Plans
TSV	Theater Support Vessel
TTPs	tactics, techniques, and procedures
TUAV	tactical unmanned aerial vehicle
UA	Unit of Action
UAV	unmanned aerial vehicle
UAVS	Unmanned Aerial Vehicle Systems
UE	Unit of Employment
UEWR	Upgraded Early Warning Radar
UGV	unmanned ground vehicle
USAR	United States Army Reserve
USASMDC	U.S. Army Space and Missile Defense Command
USC	United States Code
USG	United States Government

ACRONYM	DEFINITION
USJFCOM	United States Joint Forces Command
USAEUR	United States Army European Command
USSTRATCOM	U.S. Strategic Command
WIN-T	Warfighter Information Network-Tactical
WMD	weapons of mass destruction
WME	weapons of mass effects
WSR	weapon status report
XBR	X-Band Radars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