2003 Army Modernization Plan

Overview

The Army is fully engaged today in the Global War on Terrorism and stands prepared to fulfill all missions assigned to it by the President and Secretary of Defense in the challenging and changing security environment of the early 21st century. Several years ago, the Army initiated significant changes that are already being applied in the form of new capabilities available to the Joint Force, and additional and dramatic efforts are underway for transforming the Army into an even more responsive and effective force in the future. The new security environment, and particularly the war on terrorism, demands innovative and often revolutionary responses, and the Army is aggressively pursuing a process of change—Transformation—to field a force that continues to meet the Nation's security needs for a land force second to none in the world. The challenge to adapt and change is not an easy one, but it is a challenge the Army enthusiastically accepts and is determined to accomplish in the coming years.

Since Army Transformation began in 1999, a new National Security Strategy, published in September 2002, and a supporting defense strategy and associated defense operational goals and transformation pillars have provided additional focus and impetus to the Army efforts already underway to achieve a future force capable of meeting operational needs across the full range of missions. The Army remains committed to transforming itself into a future force—the Objective Force—that will be strategically responsive and dominant across the spectrum of conflict and will harness advancements in technology into a modernized Army. Achieving the Objective Force in a timely manner requires the Army to invest in significant science and technology (S&T) efforts and to make key decisions on which technologies to develop and incorporate into future equipment for our Soldiers. Successful Transformation, however, is much more than equipment encompassing new technology—it will be the integration of equipment, doctrine, training, and infrastructure and the development of Soldiers and leaders into combat-capable units that will decisively win the wars of the 21st century.

While the Army is focusing much of its effort on investments in the future, it is also intent on sustaining a decisive-win capability and maintaining a high state of readiness as part of the Joint Force. This imperative means that the Army must continue to invest sufficient but limited resources in today's force—the Legacy Force—by recapitalizing key systems and modernizing those few systems needed to maintain combat superiority and joint interoperability. Additionally, the Army is complementing the existing force by fielding a number of uniquely capable units—the Stryker Brigade Combat Teams (SBCTs)—that are designed to provide a responsive, lethal, and sustainable capability not previously available to the Joint Force and the regional Combatant Commanders. Supporting these concurrent efforts presents a challenge to the Army and an imperative to balance risks and resources between readiness today and readiness tomorrow.

The Army today is continuing to progress in implementing the Transformation process initiated in 1999 and is successfully building on the momentum that has been achieved as a result of invaluable support from Congress and the Department of Defense (DoD). Since the publication of the *2002 Army Modernization Plan*, the Army has:

- Accelerated Transformation by increasing funding for the Objective Force by almost $14.9 billion.

- Awarded the Lead Systems Integrator (LSI) contract for the Future Combat Systems (FCS) to Boeing and Science Applications International Corporation (SAIC) in March 2002. Likewise, it has developed a flexible funding strategy for the FCS, which will help identify initial requirements and accommodate future design changes.

- Developed the doctrinal foundation (Training and Doctrine Command (TRADOC) *Pamphlet 525-3-90, Operational and Organizational Plan for Maneuver Unit of Action*) for the fighting elements of the Objective Force, the Unit of Action, and published the organization and operations plan for their future development, which describes the concepts and capabilities for these units.

- Commenced fielding of the new Stryker Armored Vehicles (SAV) to the first two Brigade Combat Teams in March 2002. Newly equipped units participated successfully in the major joint experimentation exercise, Millennium Challenge 2002 (MC02), in summer 2002.

- Initiated application of the Unit Set Fielding (USF) process with the second SBCT at Fort Lewis, WA.

- Identified and made difficult reductions/ adjustments in 48 systems in order to generate approximately $22 billion of savings to fund Transformation and other higher priority programs.

- Aligned the Army with DoD Transformation goals by increasing funding by over 37 percent for selected key areas.

- Increased investments in critical S&T efforts by $1.09 billion over last year's budget.

- Initiated a bold business reengineering effort in the Army's installation management in order to allow an increased warfighting focus for commanders. Established the Installation Management Agency (IMA) and Army Contracting Agency (ACA) to facilitate more effective and efficient management of Army installations worldwide.

- Commenced total integration of revolutionary Logistics Transformation reforms following the completion of a Chief of Staff, Army (CSA)-initiated analysis. These reforms will reshape the way the Army provides logistics and subsequently impact the level of modernization required for Army units.

- Aligned its force structure to adapt to the new defense strategy and guidance by adjusting over 18,000 billets to support new missions and responsibilities in critical areas of homeland defense, special operations, and chemical/biological detection/defense.

- Began restructuring the Reserve Component (RC) to facilitate support to homeland defense and warfighting missions.

- Implemented the Office of the Secretary of Defense (OSD) decision to terminate Crusader and reallocate funds toward other indirect fire programs to meet future fire support requirements.

Purpose

The *2003 Army Modernization Plan's* purpose is to effectively and efficiently support Army Transformation in order to deliver future readiness characterized by a force that is responsive, deployable, agile, versatile, lethal, survivable, and sustainable at every point on the spectrum of potential operations. The *2003 Army Modernization Plan*, like the 2002 and 2001 plans, focuses on building combat-capable units to support the transformation of the Army and ensure the continued capability of the Army to win our Nation's wars and successfully fulfill all missions assigned in defense of our national interests. Along with the *Army Science and Technology Master Plan*, it provides the rationale and justification for the research, development, and acquisition (RDA) portion of the Army's program in support of President's Budget Fiscal Year 2004 (PB04). Furthermore, it is fully consistent with and supportive of implementing the guidance of the Army leadership, which is reflected separately in *The Army Plan* as well as in the annual *Army Posture Statement* and the *Army Transformation Roadmap*, which was submitted for the first time to OSD in summer 2002. Specifically, the *Army Modernization Plan*:

- Describes Army Transformation, its progress to date, and how the Army Modernization Strategy supports Transformation.

- Describes how Army Transformation also fully supports DoD transformation efforts as outlined in the Defense Planning Guidance (DPG) and the emerging Transformation Planning Guidance.

- Describes the future operational environment and the future warfighting concepts the Army is expected to use in that environment.

- Explains how Army Transformation and its implementation are supported by modernization efforts across the entire breadth of Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF).

- Focuses modernization through the application of:

  - Unit Set Fielding (USF)

  - Software Blocking (SWB)

- Describes the Army Modernization and Investment Strategies.

- Provides information on selected programs that are critical to Transformation efforts.

- Communicates Fiscal Year 2004 (FY04) budget priorities, key accomplishments and remaining shortfalls, and shapes conditions for Army budget planning for future years.

The *Army Modernization Plan* does not offer the following:

- Specific details on all RDA programs. This information is provided in other documents, to include the *U.S. Army 2003 Weapon Systems Handbook*.

- Specific commitment for budget figures beyond FY04. Any information reflected for these years represents an Army planning estimate and is subject to change.

- Modernization schedules for specific units that are published and disseminated separately.

Strategic Environment and Future Response

The Army's decision, made initially in 1999, to transform itself into a more responsive and capable force was the result of an appreciation of an altered and rapidly changing strategic environment. The end of the Cold War had already rearranged the broad shape of the requirements facing the U.S. military, and subsequent trends and events reinforced the need for substantive change. This new environment also included the realization of a revolution in information technology that presented both an imperative as well as an opportunity to adapt organizations and equipment to meet the challenges of the 21st century. While the recognition of this need for change was acknowledged in recent years, the dramatic events that occurred in late 2001 and throughout 2002 have vividly reinforced the nature of the new strategic environment and the associated urgency for effective and innovative responses now and in the future.

National Security Strategy

Building upon the foundation of previous strategic policy and analysis and fully taking into account the lessons painfully learned from the attacks of 11 September and their aftermath, the White House published in September 2002 a new National Security Strategy to serve as the foundation for future U.S. actions and responses. This new strategy places special importance and emphasis on the need for U.S. leadership and unchallenged military superiority. While it addresses the integration of all facets of U.S. power and policy—political, diplomatic, economic, and military—the document provides particularly clear direction and focus for the U.S. military. In that regard it specifically emphasizes that the defense of the United States is the military's highest priority. It also introduces a new shift in emphasis on preemption and preventive uses of force in response to the catastrophic threats from terrorist attacks. Additionally, it stresses the need for transforming the military to overcome the new operational challenges and to provide the President with a wider range of capabilities and options to discourage and defeat any enemy. Overall Army Transformation efforts, as well as the plans and efforts of sister Services, will be measured in terms of fulfilling these strategic imperatives.

Defense Strategy, DoD Critical Operational Goals and Transformation Pillars

In response to the demands of the new strategic environment, the Quadrennial Defense Review (QDR) in 2001 previewed a new defense strategy that called upon the Services to transform to meet future challenges and to preserve military preeminence. The newly released National Security Strategy validates and reinforces this preliminary guidance and gives it even greater urgency.

The defense strategy unveiled in 2001 identified four major mission areas to guide the Services and serve as a benchmark to guide respective force planning. These included the missions to:

- Defend the United States (enduring first priority).
- Deter aggression and coercion forward in critical regions (Europe, Northeast Asia, the East Asian littoral, and the Middle East/ Southwest Asia.

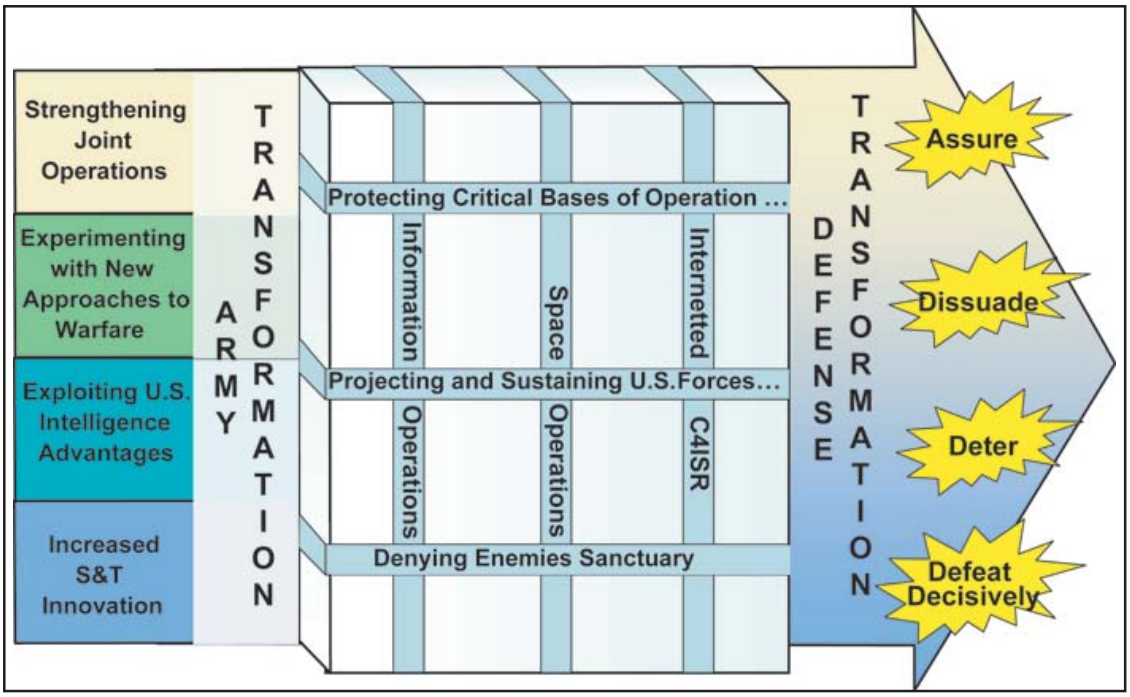

Figure 1. DoD Transformation

- Swiftly defeat aggression in two overlapping major conflicts while preserving for the President the option to call for a decisive victory in one of those conflicts—including the possibility of regime change or occupation.

- Conduct a limited number of smaller-scale contingency operations.

Providing the necessary capabilities to fulfill these missions guides the Army's efforts, but also constrains the Army's ability to simultaneously transform rapidly. Balancing these objectives—for fulfilling near-term missions and longer-term change—is both a constant challenge and essential requirement for the Army.

In addition to identifying four mission areas, the defense strategy promulgated in the QDR in 2001 also included six critical operational goals to focus respective Service transformation efforts. These six goals, sometimes referred to as the Defense Transformation Goals, encompassed the following:

- Protecting critical bases of operations (U.S. homeland, forces abroad, allies and friends) and defeating chemical, biological, radiological, nuclear, and enhanced high explosive (CBRNE) weapons and their means of delivery.

- Projecting and sustaining U.S. forces in distant anti-access or 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 at various ranges and in all weather and terrain.

- Assuring information systems in the face of an attack and conducting effective information operations.

- Enhancing the capabilities and survivability of space systems and supporting infrastructure.

- Leveraging information technology and innovative concepts to develop an interoperable, joint command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) architecture and capability that include a tailorable joint operational picture.

In addition to highlighting these six operational goals to guide respective efforts of the Services, the 2001 QDR also stressed the need for an overall force transformation strategy, which would rest on the following four pillars:

1. Strengthening joint operations.

2. Exploiting U.S. intelligence advantages.

3. Experimenting in support of new warfighting concepts.

4. Developing transformational capabilities.

The Army's comprehensive plan to transform itself has already set in motion specific and concrete support for achieving these goals by ensuring the Army has the requisite capability to decisively defeat the enemy on the future battlefield with forces that are strategically responsive, deployable, agile, versatile, lethal, survivable, and sustainable. Through the development of its Objective Force, the Army will provide direct support to achieving successful force transformation by preserving key existing capabilities, such as that for forced-entry and tactical assault, and adding major improvements that will capitalize on new technologies to enhance the overall effectiveness of the force.

Global War on Terrorism

Successfully pursuing and prosecuting the ongoing Global War on Terrorism remains the highest priority for the Army as well as the entire DoD. This mission is also fully consistent with the identified priority for security of the United States as the primary enduring mission for the U.S. military as a whole. Waging the war on terrorism encompasses all instruments of power, efforts overseas as well as at home, and the use of all Army components—Active, National Guard, and Reserve—as well as the essential civilian element of the Army structure.

Overseas, the Army has demonstrated in Operation Enduring Freedom the tremendous value of highly trained and balanced forces in conducting the Global War on Terrorism. The Army's Special Operations Forces (Rangers, Special Forces, Special Operations Aviation, Psychological Operations, and Civil Affairs units) have been the leading edge in this campaign, and alongside them divisions from the XVIII Airborne Corps (10th Mountain, 101st Airborne, and 82nd Airborne) have demonstrated the strength of diverse and responsive forces. Army division and corps headquarters, as well as Third U.S. Army, have served invaluably as joint and coalition headquarters elements. More than 14,000 Soldiers in all are engaged in the overall operations in theater, and they include forces from all components—Active, Guard, and Reserve—arrayed as part of the fully integrated Joint Force with coalition partners.

At home, the Army is playing a critical role in the realm of homeland security, and over 30,000 Guard and Reserve Soldiers have been mobilized for federal service, with some being used abroad and the bulk employed for domestic missions. Over 10,000 National Guard Soldiers have been employed in critical

- Largest ground operation since the Gulf War; biggest light infantry battle since Vietnam.
- U.S. forces initially intend to support Afghan fighters; required to prepare assaults against dug-in forces.
- Brigade airlifted into the mountain range that straddles the Afghanistan and Pakistan border.
- Al Qaeda, holding high ground, attack U.S. forces with mortars and heavy machine guns.
- All AH-64s in first fight sustain some damage, but remain operational.

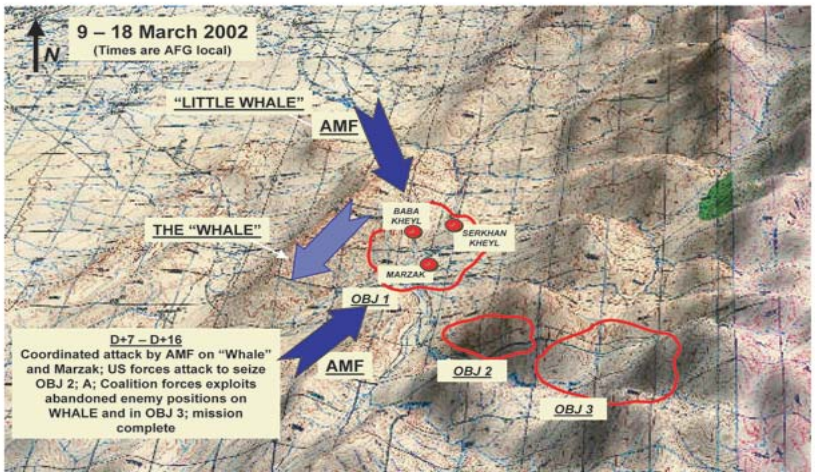

Figure 2. Operation Anaconda

state-controlled missions to secure vital infrastructure facilities.

The continuing Global War on Terrorism strongly reinforces the need to transform U.S. Armed Forces, and for the Army in particular this conflict provides even stronger emphasis on the critical importance of the ongoing Army Transformation process. The Army bears a special responsibility in many unique operational aspects associated with this environment, from stability operations to responsive small unit operations, and the lessons being learned during this war must be incorporated into future structures and training.

Homeland Security

As previously mentioned, the new National Security Strategy and the accompanying defense strategy identify security of the United States as the highest priority for the U.S. military. In the past, fears of potential asymmetric threats and an increased pace and scale of ballistic missile proliferation raised concerns about the vulnerability of the United States homeland. The terrorist attacks on 11 September 2001 converted these potential threats into a deadly reality and imminent danger. Since then considerable national efforts have been devoted to improving the overall security of the United States through the consolidation of government efforts into a Department of Homeland Security and the establishment of a new combatant command, U.S. Northern Command. The latter command, which became effective on 1 October 2002, is the first command to have unified responsibility for the defense of the United States, and it encompasses the continental United States, Canada, Mexico and portions of the Caribbean and Alaska. The Army is a key participant in support to both of these new organizations and is likewise adjusting its structure and programs to new responsibilities. Army Transformation will incorporate necessary adjustments to fulfill this new mission, and the *Army Modernization Plan* again incorporates an annex on Homeland Security to discuss the Army's role in this critical area.

Future Operational Environment

Over the next two decades, U.S. Armed Forces will operate in a geostrategic environment of considerable instability. The most dangerous

challenges will likely come from a combination of state, nonstate and transnational actors possessing a global reach. The use of military power or violence will remain an integral factor in the international arena. Therefore, any crisis contains the potential for escalation into a situation having implications for U.S. security interests. Within the operational environment regional powers will grow, new ones will emerge, and transnational actors will arrive on the global scene. Shifting demographics (high population growth causing increased migrations and more pressure on scarce resources), economics (increasing globalization and the spread of transnational business), and technology (widely available advanced systems that are very user friendly) will drive developed and developing states alike into global networks, altering power relationships within regions. Globalization demands international interaction on a wide range of issues, creating friction as cultures, religions, governments, and economies network and collide in a highly competitive global setting. It can also be said with reasonable certainty that during this period, state and/or nonstate actors will employ or threaten violent force as a means to pursue their interests. That violence will not be limited to where U.S. forces may deploy, but as the attacks on 11 September 2001 have demonstrated, may also occur in the United States.

The operational environment is characterized by 11 critical variables as shown in Figure 3. The emerging threats (shaped in part by the operational environment) that define the

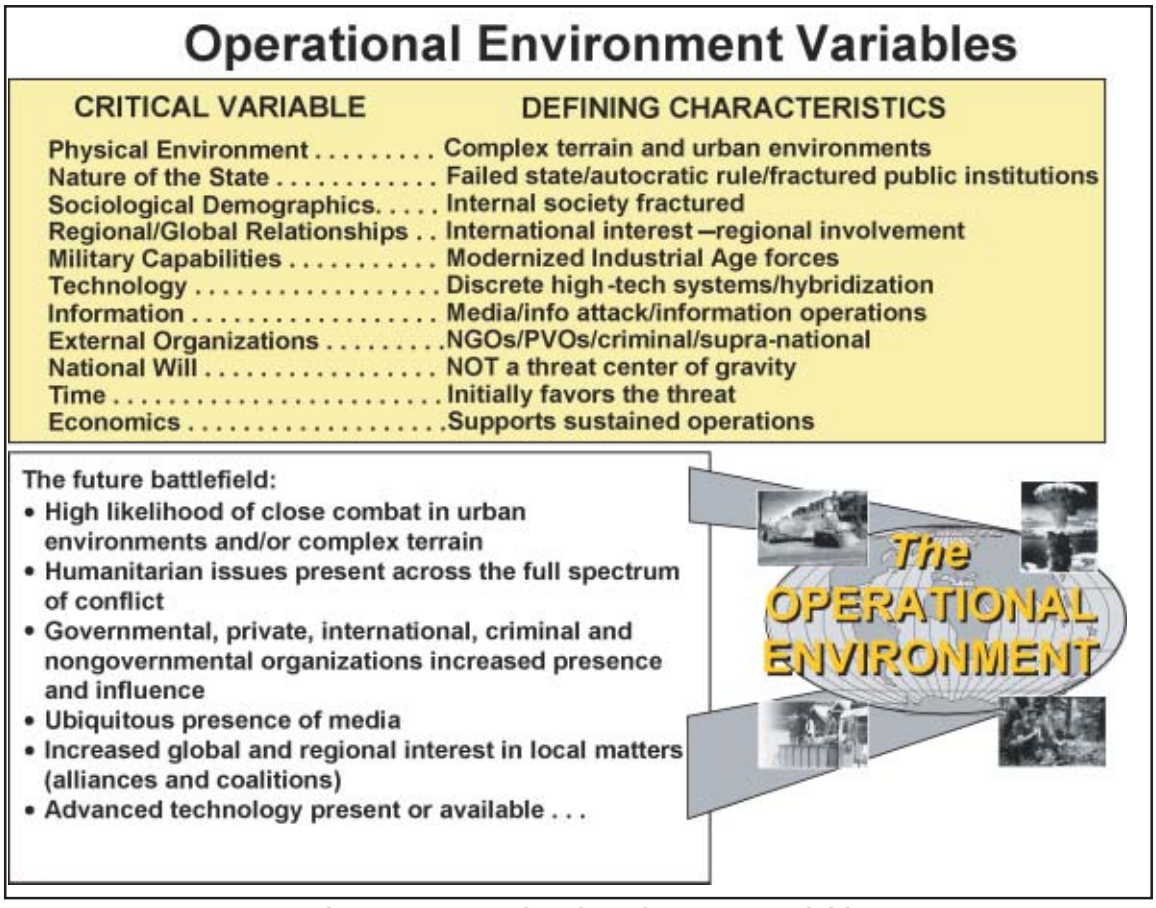

Figure 3. Operational Environment Variables

strategic and operational setting for military operations in the next 20 years have an inherent campaign quality, meaning they will employ all assets at their disposal, including time, to win. Opponents will orchestrate their actions so that the traditional lines of operation—strategic, operational and tactical—will blur as events shift from one level to another and back again. Their actions assume a campaign quality. The more that adversary national interests or survival are at stake in the conflict, the more an opponent will wage "total war." This occurs when an adversary mobilizes all dimensions of his national power to wage war. In other words, every person becomes a potential combatant and every asset a weapon.

This campaign quality extends to the adversary's ability to create, mobilize, develop, and evolve his fighting forces—active, reserve, paramilitary, police—and also allows him to adapt his forces, tactics, techniques and procedures to allow him to more successfully engage technologically superior U.S. forces. Future campaigns against the United States will include a balance of asymmetric, adaptive and conventional operations executed over a time frame that allows the results of the campaign to highlight U.S. strategic vulnerabilities, such as the requirement to rapidly deploy forces to conflict areas.

The United States, at present, is able to eventually dominate any military force it will encounter in the various regions of the world. The United States, however, must be able to deploy rapidly and with decisive force to those regions where it will meet those forces. Some adversaries conclude that they can conduct operations below a threshold that would elicit U.S. military response; others realize that they must attempt to keep the United States from deploying to their regions. To accomplish this goal, several adversaries will use all means possible—diplomatic, information, military, economic, and even terrorist attacks on the United States or its allies' installations or homelands—to pressure the United States and its allies from ever deploying forces to intervene in conflict regions. If they are unable to preclude U.S./allied intervention, they will try to exclude our forces from entry by denying or striking the airbases or seaports our forces will need to conduct operations and sustain their operations. They are likely to employ cruise and ballistic missiles, aircraft and unmanned aerial vehicles (UAVs), special purpose forces, and terrorists. If U.S./allied forces are able to deploy, they will attempt to limit or stop the flow of U.S. assets and support into an area. If the United States is successful in deploying forces to an area, the enemy will use all of the operational environment factors to influence the conduct of operations. Additionally, they will employ any niche technological enhancement in weapons technology they have been able to acquire and integrate into their forces to increase their own capability. Finally, adaptive, learning forces will operate from dispersed and decentralized positions, use extensive cover, concealment, camouflage, denial and deception to degrade U.S. advantages in targeting and long-range standoff precision weapons delivery. Enemy actions undertaken to degrade our C4ISR capabilities will be very important considering the future Objective Force's reliance upon situational awareness and understanding. Finally, adaptive learning enemies will conduct physical and information attacks upon U.S. system-of-systems (SoS) linkages in order to degrade their synergy. The goal of enemy activities is to create opportunities for their forces to attack U.S. units at times and places of their choosing. They will also try to prolong conflict, cause U.S. casualties and create conditions to end the conflict under conditions favorable to themselves.

Given creative, learning and adaptive adversaries, future U.S. Army forces must be capable of effective, proactive responses against both modernized conventional and unconventional forces, as well as capabilities employed asymmetrically. Historical success will not necessarily be a reliable indicator of successful future military operations, as potential adversaries develop ways, means, and ends aimed specifically at countering U.S. action.

The challenge ahead is the ability of U.S. Armed Forces in general and the Army in particular to maintain decisive overmatch while developing strategies, doctrine, organizations, and systems to decisively defeat adaptive learning adversaries. Army forces must retain a quality of adaptive dominance—the ability to dominate any situation regardless of how an adversary reacts. This adaptive quality will require future forces with inherent versatility and adaptive Soldiers and leaders who can account for the critical variables inherent in the future operational environment. The primary challenge for the U.S. Army in dealing with adaptive threats is shown in Figure 4.

The Army's Role in the Defense Strategy and Joint Operations

Within the expected operational environment and in support of the Nation's security and defense strategies, the Army remains the primary provider of land forces to the Joint

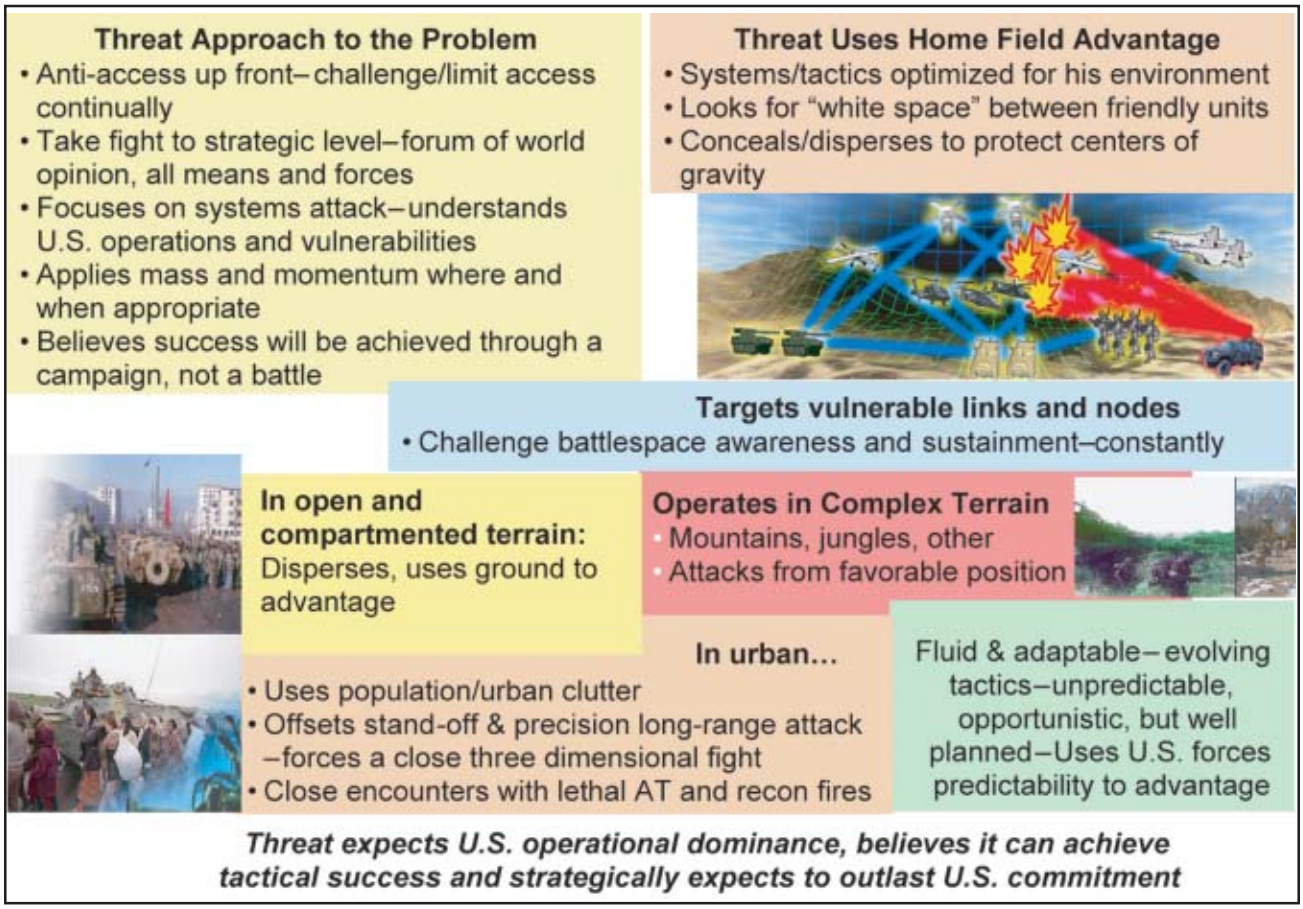

Figure 4. Adaptive Threats

Force Commander (JFC) for most future missions. The majority of missions will be joint in nature, and the full array of Army forces—from highly valuable Special Operations Forces (SOF) to the wide variety of conventional forces—will be structured and equipped to participate in such joint operations. Moreover, in those missions requiring overseas deployments, the Army relies on its sister Services for the critical strategic lift, both air and sea, to get to the theater in a timely manner. Close cooperation among the Services to produce joint interoperability and deployability, coupled with a dynamic program of training and experimentation in peacetime, will be indispensable for the success of Army Transformation as well as the respective modernization plans of the other Services. Where possible, cooperative programs with other individual Services and in a joint framework will be fully supported.

In addition to the imperative for successful joint cooperation, the Army also recognizes that many, if not most, future missions will be characterized by multinational cooperation. Coalitions have been a defining nature of most major military operations in the recent past, from the Gulf War to the Balkan missions to Operation Enduring Freedom in Afghanistan, and the likelihood is for this trend to continue in the future. As a result, the Army views effective international cooperation as an important element in making Transformation successful in both its process and eventual application on future battlefields. Such cooperation will focus on two key and complementary components—multinational force compatibility or interoperability, and security cooperation.

Army Transformation

The Army Vision: Accomplishments and Continuing Progress

In 1999, the Army leadership established a Vision for a future Army that will be more capable of rapid strategic response and tactical dominance across the full spectrum of military operations. Today's Army still remains fully prepared to serve the Nation as part of the joint and interagency team of forces and capabilities, and it is actively engaged in meeting security requirements worldwide. While continuing to meet these responsibilities, however, the Army is also adapting to the changed nature of the security environment as well as the opportunity for dynamic advances through the incorporation of new technologies. The end result is a dramatic process of change—Army Transformation—that is making a great Army even better and more capable of fulfilling its responsibilities to the Nation and the American people. Along with **Transformation**, two other critical components comprise the substance of the Army Vision for the future—**Readiness** and **People**. Readiness will always remain the Army's top priority for fulfilling its near-term responsibilities, and People will always be the centerpiece of our investment and link to the Nation. Together with Transformation, these form the inseparable triad of priorities that will guide the Army's decisions and actions.

The Army is making significant progress in providing Transformation with irreversible momentum on a path toward a future force—the Objective Force—that will offer an array of capabilities that are revolutionary in their nature and dominating in their application. Significant

investments are being made in the critical areas of science and technology to lay the foundation for decisions about which technologies to resource and eventually provide to our Soldiers and units. In the meantime, new and needed capabilities are being developed, tested, and fielded in today's Army that measurably enhance the Army's versatility and contribution to the Joint Force. Successful Transformation, however, is ultimately more than just new equipment—it is the integration of equipment, doctrine, training, and infrastructure, and the development of Soldiers and leaders into combat-capable units that can fulfill the entire array of missions in the 21st century security environment.

Aligning Army Transformation with Defense Transformation and Strategy

While Army Transformation has been underway for several years, it is critically important that this revolutionary process of change be adapted as necessary to keep it fully aligned with changes in the strategic environment as well as with any adaptations in DoD policy. As a result of last year's QDR as well as subsequent policy deliberations, DoD has recently provided more definitive direction on how transformational efforts of all Services should progress in the future. The most recent budget planning process conducted by the Army, which serves as the basis for the Army's portion of PB04, has already begun the necessary refinement and realignment of Army Transformation in concert with DoD transformational guidance. The greatest challenge in this endeavor relates to the fundamental issue identified in previous Army Modernization Plans; that is, the appropriate balance between readiness for near-term operational requirements and the need to develop transformation capabilities for the future. In line with the six newly identified Defense Transformation goals, the Army is

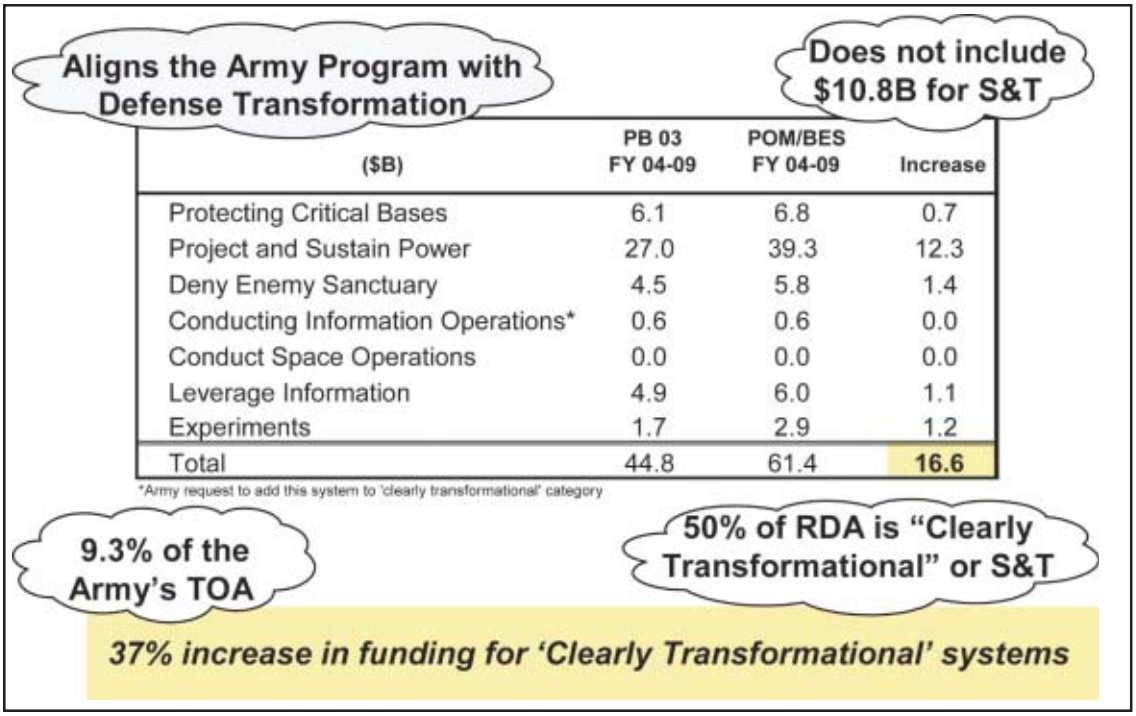

Figure 5. Army Alignment with DoD

putting additional resources ($16.1 billion) specifically toward improving the Army's capabilities over the period of the Future Years Defense Plan (FYDP) in these critical operational areas. The Army is focusing on accelerating the pace of its Transformation process as well as ensuring that all aspects of this process support the overall goals identified by DoD.

Transformation Roadmap

In June 2002, the Army released its first *Transformation Roadmap* as a means of reporting to DoD on how Army Transformation was implementing DoD guidance to the Services, and specifically what measures were being taken by the Army to develop those capabilities needed to support achievement of the six critical operational goals identified in the 2001 QDR. The results highlighted in this roadmap are also consistent with the contents of the *2003 Army Modernization Plan* since they reflect the same budget planning process for the Army. The Army's *Transformation Roadmap*, once reviewed and approved by OSD, will also serve as a basis for future budget planning and execution. The Roadmap, like Transformation itself, is dynamic in nature and will accordingly reflect progress and adjustments over time.

Transformation Campaign Plan

The Army's overall Transformation efforts are being synchronized by a blueprint document and process, *The Army Transformation Campaign Plan (TCP)*, which integrates the multifaceted elements leading toward the eventual achievement of the Objective Force. The TCP, which is developed, coordinated, and maintained by the Army G3, ensures the synchronization of the Transformation process with the day-to-day management of the Army. It serves to integrate the Army's efforts with joint and DoD efforts and guidance, and it helps concentrate collective actions in the most efficient and effective manner to accomplish the ultimate objective of a future force that is strategically responsive and dominant across the full spectrum of operations. The TCP, likewise, is a living document that is modified in light of changing needs, and it is presently undergoing modification to a Change 1 version. Respective phasing and lines of operation are employed as means of tracking and coordinating actions across the Army, and a software tool, the Synchronization Matrix, is employed as a near-real-time vehicle for following the myriad of transformational actions.

Transformation Timelines—Building Combat Power Over Time

The Army is taking a phased approach to developing and fielding capabilities over time. In the near term, the focus is on fielding the SBCTs, improving the current heavy forces through the incorporation of new technology to create a common operating picture, and designing the future Objective Force while simultaneously developing the new technologies that will be the foundation of revolutionary change. In the midterm, the Army will complete the fielding of the SBCTs and the selected and limited modernization of the current force, and begin fielding of Objective Force units. In the long term, the Army will continue transforming into the Objective Force, while still seeking "leap-ahead" improvements in future capabilities as opportunities arise. Transformation is a continuum of change and improvements that seeks to maintain clear military superiority in the face of future threats and technological developments.

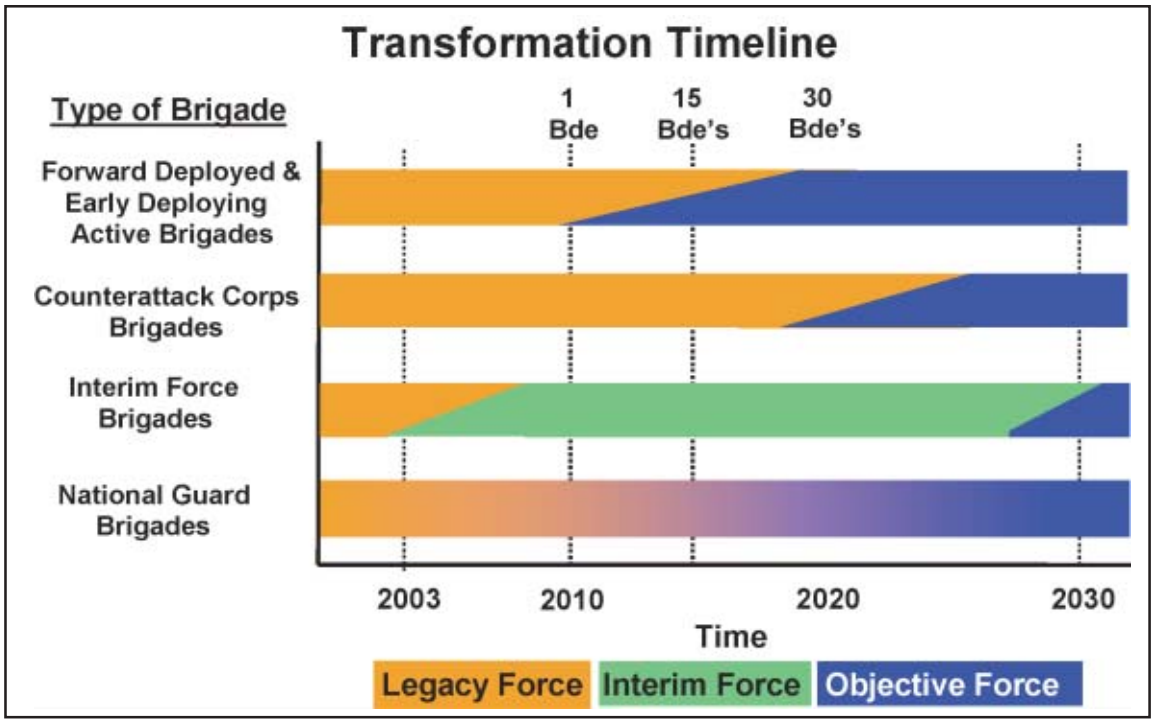

Figure 6. Transformation Timelines

The Objective Force—The Army of Tomorrow

The Objective Force is our future full-spectrum force: organized, manned, equipped, and trained to be more strategically responsive, deployable, agile, versatile, lethal, survivable and sustainable across the entire spectrum of military operations from major combat operations (MCOs) through counterterrorism to homeland security. Objective Force units will conduct operational maneuver from strategic distances, and arrive at multiple points of entry, both improved and unimproved. As necessary, Objective Force units will conduct forcible entry, overwhelm aggressor anti-access strategies and capabilities, and rapidly impose our will on our opponents. In this manner, Objective Force units arrive immediately capable of conducting simultaneous, distributed and continuous combined arms, air-ground operations, day and night, in open, close, complex, and all other terrain conditions throughout the battlespace. Army units conducting joint and combined operations will "See First, Understand First, Act First and Finish Decisively" at the strategic, operational, and tactical levels of war.

Army Objective Force units will dominate land operations, providing the decisive complement to air, sea and space operations. They will create synergy within the Joint Task Forces (JTFs) by controlling the ground, where people and political authorities reside. Combined precision maneuver and precision strike capabilities, linked by decision superiority, will defeat our opponents in their protective sanctuaries in detail or force them into the open where they can be destroyed with joint fires. The psychological effects produced by the power and precision of Objective Force units will serve to deter hostile acts, both prior to deployment and during the stability phases of operations. The presence of Objective Force leaders and Soldiers, disposed across the battlespace yet operationally integrated through an information network, provides the JFC

situational dominance in applying lethal and nonlethal effects with unprecedented precision across the spectrum of military operations.

Information superiority is a key enabler for achieving the Army's Transformation goals and its modernization into the Objective Force. Army Knowledge Management (AKM) is the Army's strategy to achieve this objective by transforming itself into a network-centric, knowledge-based force. A commander-focused, intent-centric environment will be the hallmark of information-empowered operations in the future, bringing situational awareness of the total environment—friendly, neutral, unknown and enemy—to the commander, where and when he needs it, in an intuitive format. Further, it will allow him to collaborate both vertically and horizontally with other leaders to seize and maintain battlespace understanding to act first and finish decisively. The technologies that support this sort of warfare must be augmented by appropriate changes in doctrine, organization, training, leadership, and education to exploit the power of knowledge management and to achieve a capabilities-based Army for 2010 and beyond. This effort is an integral part of Army Transformation. AKM will vastly improve information superiority for our warfighters and business stewards—in the battlespace, in our organizations, and in our mission processes supporting logistics; intelligence, surveillance and reconnaissance; personnel management; medical services; and the training and education of Army personnel worldwide. To this end, the Army has recently activated the Network Enterprise Technology Command (NETCOM) as the Army's single authority to operate, manage, and develop the Army Knowledge Enterprise (AKE). NETCOM is now implementing the Army's enterprise concept for voice, data, and video networks, improving network capacity, performance, and security across the AKE. Accordingly, NETCOM has assumed technical control of all Army networks including those of the Army National Guard and Army Reserve.

Objective Force units will make significant contributions at all three levels of warfare: strategic, operational and tactical. At the strategic level, Objective Force units will continue to meet the Army's nonnegotiable contract with the American people to fight and win our Nation's wars. Objective Force units will also continue to provide the Army's unique contribution to national security: sustained land dominance across the range of military operations and spectrum of conflict. Army Units of Action (UA) will comprise the tactical warfighting echelons of the Objective Force, filling the same role as today's brigades and lower echelons.

At the operational level, the Army provides headquarters that act as integrating agents within joint, interagency and multinational teams. Designated Objective Force headquarters and major commands (which will be characterized as Units of Employment (UE) at what is now equivalent to corps and division levels), will act as JTF Headquarters, Joint Force Land Component Commands (JFLCC), and/or Army Forces (ARFOR) command headquarters. Army headquarters at all levels will also be integral parts of any Standing Joint Task Force (SJTF), which may be formed by the respective Combatant Commanders to provide seamless joint command and control (C2). For land campaigning, the Objective Force will provide operational-level decision and information superiority to JFCs, enabling them to gain and maintain operational initiative. Information superiority will be gained through operational level intelligence, surveillance, and reconnaissance (ISR); information management (IM); and information operations (IO). When coupled with Objective Force land campaign planning expertise, information

Figure 7. Objective Force

superiority enables JFCs to see first, understand first and act first at the operational level.

The Army's ability to dominate the tactical level of war—the short-sword warfight—upon which operational and strategic success is built, is essential for Joint Force success on land. Recognizing what is possible at the tactical level has been the subject for years of intense Army study and wargaming and, more recently, training enhanced with networked situational awareness within Legacy and Interim Force formations. Objective Force units will be optimized to win on the offensive, to initiate combat on their terms, to gain and retain the initiative, build momentum quickly and win decisively. They will be capable of mastering the transitions in warfare—from fort to foxhole, from offense to defense, from warfighting to support operations—to maintain operational momentum and threaten retention of the initiative. At the tactical level, Objective Force Units will see "See First, Understand First, Act First and Finish Decisively" as the means to tactical success. Operations will be characterized by developing situations out of contact; maneuvering to positions of advantage; and engaging enemy forces beyond the range of their weapons; destroying them with precision fires and, as required, by tactical assault at times and places of our choosing. Commanders will accomplish this by maneuvering distributed and dispersed tactical formations equipped with Future Combat Systems (FCS) and Objective Force Warrior (OFW) for the dismounted Soldier and his leader, and enabled by networked battle command capabilities for common situational awareness. With these capabilities, the Objective Force will master the transitions at all levels of operations.

Units of Action (UA) and Units of Employment (UE)

As part of its overall Transformation process, the Army is assessing the echelonment of future formations. It is envisioned that future Objective Forces, enabled by networked battle command, will conduct operations that are jointly integrated at a much lower level of command than today. Current thinking is focused on use of the organizational constructs referred to as UA and UE. Both of these levels of organization are intended to provide the Nation with units that will accomplish the full spectrum of missions the Army is called upon to perform—from homeland security to humanitarian assistance to small-scale contingencies (SSC) or major combat operations (MCO).

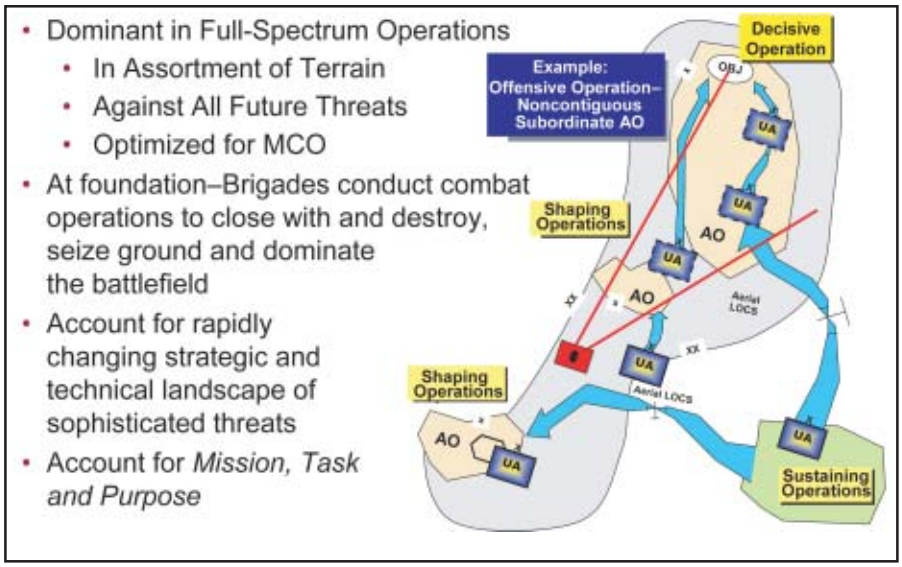

Figure 8. Units of Action

Units of Action

The Army accomplishes these missions today through the use of nine ground combat formations. These are (in order of their strategic responsiveness): Special Forces groups and the Ranger Regiment, airborne, light infantry, the Stryker Brigade, heavy forces comprised of mechanized infantry, armor and armored cavalry, and air assault formations. These formations account for the entire range of threats and all conditions and variables in which these forces will be employed. The UA will account for the mission sets of these combat formations with the exception Special Forces, Ranger and airborne forces.

The UA balances the capabilities for strategic responsiveness and battlespace dominance. It also balances deployability and sustainability with its responsiveness, lethality, survivability, agility and versatility. Although optimized for offensive operations, the UA can execute stability and support operations. It employs a revolutionary networked battle command architecture to vary its span of command and control and integrate UE or JTF supporting capabilities to accomplish its mission.

The hallmark of UA operations will be the significant ability to develop situations out of contact, come at the enemy in unexpected ways, use teaming with leader initiative, maneuver to positions of advantage with speed and agility, engage enemy forces beyond the range of their weapons, destroying them with enhanced fires, and assaulting at a time and place of our choosing. Although not necessarily sequential, it is the combination of fires (precision and volume) and maneuver, and the tactical assault that makes the enemy's problem so difficult. The cumulative effect of simultaneous, multidimensional operations will be to dominate an adversary, enabling friendly forces to destroy, dislocate and disintegrate him and transition to the next engagement.

Designed to ensure a campaign quality, the UA not only has the responsiveness and deployability to achieve a 96-hour deployment goal, it is specifically designed with the durability, endurance and stamina to fight battles and engagements for the duration of a campaign, focused on the decisive points and centers of gravity. Given its inherent tactical mobility, it can land at points removed from its objectives, out of range of enemy defenses, and then move by land to complete its mission. This capability applies not only to entry operations, but also to theater operations throughout the campaign.

The UA will master the transitions in warfare that sap operational momentum and threaten initiative retentions. Superior situational understanding delivers the advantage required

to close with and destroy the adaptive and asymmetric adversaries of the future and allows the commander to set the requisite conditions for mission success in purpose, time and space.

The UA is not a fixed organization. It has the capability to command and control up to six maneuver battalions and its C4ISR architecture enables the UA to increase its span of control. The UA can force tailor up with additional capabilities for specific missions and between missions in the campaign and is able to employ a range of supporting capabilities, from a UE or a JTF, to perform a variety of missions such as reinforcing fires, air and missile defense or civil operations.

Historically, uncertainty about friendly and enemy conditions on the battlefield often dictated cautious movements to contact. Forces lost both time and resources developing the situation while in contact, followed by the initiation of decisive action at a time and place that was not necessarily of choice. UA capabilities intend to break this paradigm and develop situations out of contact and destroy enemy forces at the commander's desired time and place through improvements in:

- Information dominance that allows unprecedented situational awareness and understanding.
- Embedded, robust, all-weather 24/7 ISR.
- Ability to plan collaboratively and rehearse virtually while on the move, arriving at the objective on parallel axes.
- Inherent air-ground integration.
- Manned/unmanned teaming with organic unmanned weapons systems.
- Standoff destruction of enemy systems with assured lethality featuring a high probability of a hit and equally high probability of kill, all beyond the range of the enemy's weapons.

The UA has the wherewithal to develop the situation before, during and after contact, affording leaders and Soldiers unprecedented situational dominance with revolutionary competencies and capabilities. The UA acts within a new tactical paradigm based upon the quality of firsts: "See First, Understand First, Act First and Finish Decisively".

See First. UA leaders see the entire battlefield: the parts, the whole and the surrounding environment, including terrain, weather, and population implications that affect operations. They must know, think and understand several steps ahead of the enemy while simultaneously ensuring the enemy sees last. This is done through aggressive counter-reconnaissance, which is especially focused on enemy air and UAV threats as well as enemy special purpose forces. Given the availability of national and joint assets, the UA will arrive in theater with somewhere between 50 percent knowledge of enemy situation in open, rolling terrain to as low as 10 percent knowledge of enemy situation in major urban areas. Embedded ISR capabilities within the UA's organizational design will improve understanding of the enemy's disposition and capabilities to about 80 percent, thereby allowing the UA to develop the situation in open, rolling terrain while on the move from dispersed, parallel axes. In complex, urban terrain, the UA will require tactical patience while it isolates key areas and conducts deliberate reconnaissance to ensure its small units can see first and prevent enemy from gaining tactical surprise.

Understand First. Leaders must understand the enemy's patterns so they understand what

information means and know what they must do with it. Much of this is accomplished by matching the UA's ISR results with external ISR databases to provide the UA commander with the tailored information required to recognize the tactical opportunities on the battlefield. Exploitation of these opportunities allows UA units to take actions that yield operational or even strategic results against the enemy's centers of gravity, decisive points and vulnerabilities. What is described here is more than "understanding" prior to contact and then hammering the enemy with fires to achieve a tactical decision. What is new is the UA's ability to employ "understanding" before, during and after tactical engagements to apply fires, fully integrated with maneuver, to achieve a tactical decision. Beyond understanding first, the UA leader forces the enemy to understand last through counter-reconnaissance, deception, pattern avoidance and irregular battlefield geometry.

Act First. Seeing and understanding first—a continual process—gives commanders and their formations the situational dominance necessary to act first. Through the mastery of movement techniques, mutual support, fire and maneuver, control and distribution of fires, integrating combat power, assault, and transition, the UA leader takes cues when in or out of position, and executes with speed, agility and initiative. UA leaders create an organization that is built around excellence in small unit operations, armed with information dominance, and create conditions that allow leaders down to squad level to act on intent as never before. In the past, the Army has taught leaders to accumulate an overwhelming correlation of forces prior to acting. In the UA, leaders will routinely attack with a force correlation of 1:1 to 2:1. They will achieve this ability by an overwhelming dominance of situational understanding, which will allow the UA to act at these ratios by precisely attacking enemy forces from standoff, thus setting the conditions to finish decisively.

Finish Decisively. Finally, the UA finishes decisively by controlling the tempo of operations, denying the enemy freedom of action and destroying the enemy's ability to fight. The UA can maneuver, employ fires, and transition seamlessly while in contact. It is optimized for closing with and destroying the enemy when forces are joined by:

- Precise fires and precision maneuver while in contact.
- Precision fires at standoff and 3D mutual support on the move.
- Assured mobility near the objective to avoid being trapped in enemy kill zones.
- Dismounted infantry that exits their carriers with full situational understanding.
- Tactical assault against all threats in any terrain and in all weather conditions.

Critical to the ability to "See First, Understand First, Act First and Finish Decisively" at the strategic, operational and tactical levels is a force design founded on a set of characteristics that provides the force with the capability to be strategically responsive and dominant at every point on the spectrum of military operations.

Objective Force Characteristics

These seven characteristics of the Objective Force are complementary features that together produce an overall capability greater than the individual capabilities they describe.

Responsiveness and Deployability. The UA is deployable and capable of quickly and rapidly concentrating combat power in an

operational area. It is transportable by C-130 and comparable advanced airlift and is able to deploy anywhere in the world in 96 hours after liftoff. The FCS-equipped UA can maneuver at operational distances by air, land, and sea to arrive in coherent combined arms increments and fight upon arrival.

Agility. The UA has the ability to transition among the various types of operations and from one tactical engagement or battle to the next, based on advanced battle command on the move and communications and intelligence related systems that build and sustain superior understanding. The difference is that this design is based on strengthening the leader's ability to understand the environment and execute actions aggressively. This yields a greater level of competency in the combat skills of the leader and the led. The leader not only understands the environment, but can also share that assessment with other units very effectively. This level of situational understanding makes teaming resources or units nearly effortless, giving the UA incredible agility.

Versatility. The UA can move from task to task with great agility as outlined above. Further, it can accomplish a broad range of missions giving it unparalleled versatility. The UA has the inherent capacity to dominate at any point in the spectrum of military operations based on tailorability and modularity. It can be task-organized to accomplish a wide variety of missions. An essential characteristic of the UA design is its combined arms framework, which by its very nature provides improved mission breadth.

Lethality. The UA has assured overmatch against enemy line-of-sight, beyond-line-of-sight and non-line-of-sight fires in all conditions and environments. The foundation of the UA's improved lethality is its ability to aggressively employ small units and teams at the right time and place in the battlespace. Every element in the UA is capable of generating combat power and contributing to the fight and providing overwhelming lethality overmatch. This overmatch is based on several tenets:

- Firing first with assured lethality and assured kill.
- Assured first-round kill to include avenge kill capability.
- Precision.
- Networked Army and joint fires.
- Mutual support.
- Develops situation out to 75km radius.

Survivability. The UA takes advantage of technologies that provide maximum protection and survivability down to the individual Soldier level, on or off platforms. This is accomplished by leveraging low-observable technologies, active and passive protection systems, and force protection. Survivability is also achieved by the following capabilities:

- Information superiority.
- Maximize cover and concealment techniques.
- Employ superior dash speed from cover to cover.
- Dispersed networked units that maintain mutual support in overwatch.
- Lethality that assures first-round kill.
- Effective suppressive and obscuration fires.

- Soldiers who are competent and capable of doing the right thing at the right time and doing it effectively.

- Rapid augmentation by UE combat multipliers when dictated by mission, enemy, troops, terrain, time, and civilians (METT-TC).

Sustainability. The UA is able to conduct combat operations with a much reduced logistics footprint and lower consumption rates. The UA will operate for three days at a high operational intensity and up to seven days in a medium to low operational environment before it must be resupplied.

The UA's organizational design will provide significant improvements in the critical capabilities described above. However, there will frequently be times when the UA must be augmented by additional resources to ensure overmatch in these critical areas. The augmentation will be provided, based on METT-TC, by the UE.

Units of Employment

The UEs are highly tailorable, higher echelons that integrate and synchronize Army, joint and multinational forces for full-spectrum operations at the higher tactical and operational levels of war. They link ground and joint forces and orchestrate ground operations that decide joint campaigns. They will be organized, designed and equipped to fulfill C2 functions as the ARFOR component, JFLCC or the JTF. UEs are the bases for combined arms air-ground task forces. They resource and execute combat operations; designate objectives; coordinate with multi-service, interagency, multinational and nongovernmental activities; and employ long-range fires, aviation and sustainment while enabling C4ISR and tactical direction to the UA. The UE attains organic higher-level Army, joint and coalition effects to set conditions to enter battle on our terms, seize the initiative before contact and employ our strengths against enemy weaknesses.

UEs focus on battles, major operations and decisive land 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 conditions.

The UA normally fights under the command and control of a UE. The UA orchestrates multiple engagements to win battles. The UE employs UAs to achieve tactical decision. The UA integrates organic and supporting ISR, fires and maneuver to close with and destroy the enemy.

The UE must be able to execute these core missions to enable success:

- Facilitate deployment, in total or part, anywhere in the world with little notice.

- Develop the situation before forces are joined and gain information superiority.

- Shape and isolate the battlespace.

- Shield the force from enemy effects.

- Direct entry and decisive operations to destroy, disintegrate and dislocate the enemy.

- Air assault up to a maneuver battalion.

- Synchronize operations and combat power.

- Facilitate transitions to maintain tempo in multiple battles.

- Sustain forces by synchronizing operations.
- Provide enablers to the UA.

As the Army moves forward in its transformation efforts, it continuously models and analyzes force designs and functions to ensure full-spectrum dominance. The UA and UE attributes and capabilities described above are the results of much analytical work designed to ensure the Nation has the most effective warfighting force possible. As new technologies become available and as the Army analyzes and learns from its fielding and use of the Interim Force, it will continuously refine the UA and UE concepts and designs.

The Interim Force—Needed Capabilities for Today's Army

Establishing the Interim Force fills the strategic near-term capabilities gap between Army heavy and light forces. It leverages today's state of the art technologies to bridge the capabilities gap between today's force and the arrival of the Objective Force and to provide more flexible options for the regional Combatant Commanders. Interim Force units are designed to be operationally effective at both the low end of the spectrum—peacekeeping, security-building, and smaller-scale contingencies—as well as at the high end of the spectrum—major combat operations. They are optimized for close combat to destroy enemy forces in their sanctuaries. They will also serve as an indispensable vanguard for the future Objective Force by validating operational and organizational concepts, training and leader development initiatives, and deployment scenarios.

The Army is fielding the Interim Force in the form of Stryker Brigade Combat Teams (SBCTs). Unlike brigade combat teams in the Legacy Force, the design of the SBCT features organic combined arms formations down to company level as well as the assignment of core capabilities that previously resided at higher levels. These assigned forces and capabilities include signal; intelligence, surveillance and reconnaissance (to include unmanned aerial vehicles (UAVs)); remote ground sensors; nuclear, biological and chemical (NBC) reconnaissance; artillery; and combat engineers.

The Army has resourced six SBCTs to contribute to fulfilling the 1-4-2-1 defense construct and national security requirements. At this time, the Secretary of Defense has authorized the procurement of the first four brigades. The Army will provide the Secretary of Defense with a plan for Stryker Brigades 5 and 6. The first of these (3rd Brigade, 2nd Infantry Division (3/2 IN)) is stationed and currently training at Fort Lewis, WA. 3/2 IN is scheduled to conduct deployment and certification exercises during the second and third quarters of FY03 at the Joint Readiness Training Center (JRTC) at Fort Polk, LA ,and attain operational capability by summer of 2003. The second SBCT (1st Brigade, 25th Infantry Division (1/25 IN)) is also stationed at Fort Lewis. 1/25 IN is currently receiving new equipment and conducting individual and collective training. It is scheduled to attain operational capability in 2004.

Stryker Brigade Combat Teams

SBCTs provide a tremendous capability toward the security of our Nation. They provide Combatant Commanders a rapid response force that conducts distributed and dispersed operations, especially suited for operations in complex and urban terrain, with significant enhancements in combat power empowered by situational awareness. A unique asset, Stryker Brigades can follow forced entry

operations conducted by Special Operations Forces and/or the 82d Airborne Division, with a mobile, lethal, and survivable early entry force. Prior to the formation of SBCTs, this was not possible; the Army's follow-on forces were either additional light forces which lacked lethality, tactical mobility, and protection; or heavy mechanized and armored forces which were not rapidly deployable, required a large logistics tail, and faced potential mobility challenges once deployed in austere environments where bridges could not handle heavier vehicles, as experienced in Kosovo. In May 2002, the Army deployed a Stryker unit by C-130 to the National Training Center (NTC) located in California as part of Millennium Challenge 2002 (MC02), the largest joint experiment ever conducted. MC02 successfully demonstrated the early entry capability of SBCTs, provided valuable lessons learned, and set the course to complete certification of the 3rd Brigade, 2nd Infantry Division by the summer of 2003.

SBCT Capabilities. SBCTs fill the near-term capabilities gap between heavy and light forces and bridge the gap between the Legacy Force and the arrival of the Objective Force by combining the best characteristics of heavy, light and Special Operations Forces and through the procurement of new equipment backed by enabling doctrine and training, all integrated into an improved force design and enabled by installation and range upgrades that allow Stryker units to fully optimize training time. Core qualities of the SBCT include the following:

- Rapidly deployable.
- Full spectrum capable.
- Mobility via C-130 and C-17, as well as self-deployable over operational distances by land.
- Joint and coalition interoperability.
- Combat capable upon arrival with minimum preparation.
- Precision, internetted combined arms fighting qualities.
- Decisive action from deliberate maneuver to dismounted infantry assault.
- Force effectiveness in complex and urban terrain situations.
- Decreased sustainment footprint, derived from use of a common platform, better reliability and fuel efficiences.
- Ability to operate under joint or Army Headquarters.
- Reach-back operations for joint, Army intelligence, analysis, logistics, fires, and force protection.

To achieve a very rapid deployment threshold, SBCT design capitalizes on the widespread use of common vehicular platforms, coupled with reduced personnel and a smaller logistical footprint in theater. Preconfigured in ready-to-fight combined arms packages, the entire SBCT can deploy and begin operations soon after arrival and with minimum preparation at points of entry. As an early entry force that can follow a forcible entry operation—or arrive under permissive conditions—SBCTs provide the Combatant Commander with a force optimized primarily for employment in smaller-scale contingencies in complex and urban terrain. The SBCT is particularly suited for confronting low- to mid-range threats employing both conventional and asymmetric capabilities. If necessary, particularly at the higher end of the operational spectrum, the SBCT can be augmented with additional capabilities through

the time-tested concept of task organizing for combat.

Changing the organization of the SBCT generally falls into two categories: augmentation or scalability. The SBCT is scaleable in terms of its ability to accept like-type additional forces to expand core tasks and functions already resident in the SBCT (e.g., attaching additional infantry or reconnaissance assets). The SBCT is also capable of accepting temporary augmentation, consisting of units and/or capabilities not resident within the brigade (e.g., attaching air defense, military police, civil affairs, psychological operations, or aviation assets). In both cases, units will execute their normal mission essential tasks and therefore will not require extensive training in order to deploy or operate.

In many contingencies, the SBCT might be organized to operate directly under a Joint Task Force (JTF) headquarters. In other contingencies, the SBCT will fight under the direct control of a higher Army headquarters such as a division or corps. When deployed with a combined arms division, the SBCT will provide the division the capability to conduct stability and support or security operations simultaneously with warfighting, and enhance the division's capabilities to operate in urban and complex terrain. The rapid tactical mobility and reduced sustainment burden of the SBCT maximize its employment for exploitation and pursuit operations. Whether subordinate to a JTF or Army headquarters, the higher echelon will assist the SBCT in establishing reach-back linkages to the next higher echelon to expand its capabilities in the areas of information, intelligence, joint effects, force protection and sustainment.

Requirement for SBCTs. The conversion to an SBCT design is based on thorough analysis of the security environment and anticipated operational requirements. The strategic rationale is as follows (see Figure 9):

- Converting four active duty brigades (three light and one heavy) to an SBCT design provides a critical 4:1 force management ratio for the Army rotational base.

- Converting the 2nd Cavalry Regiment (Light) to an SBCT design fixes a critical capability shortfall in the Army XVIII Airborne Corps.

- Converting the 56th Brigade, 28th Infantry Division (Mechanized) provides the force depth necessary to meet SSCs, increases the flexibility of the strategic reserve, and begins cultural transformation of the Army's Reserve Components.

- The SBCT stationing strategy best supports the overall defense strategy by orienting three SBCTs towards the Pacific and one in Europe — although these brigades are still globally responsive.

- Increased capabilities to Combatant Commanders by locating a rapid deployment force in Europe and providing the Pacific with more lethal and survivable forces.

The first two Stryker Brigades (3/2 IN and 1/25 IN) are currently training at Fort Lewis and are expected to complete their transformation and attain an operational capability in 2003 and 2004, respectively. One of these two units will be relocated to Europe by 2007. The remaining SBCTs were identified by the Army in 2001:

- 172nd Infantry Brigade (Separate) stationed at Forts Richardson and Wainwright, AK.

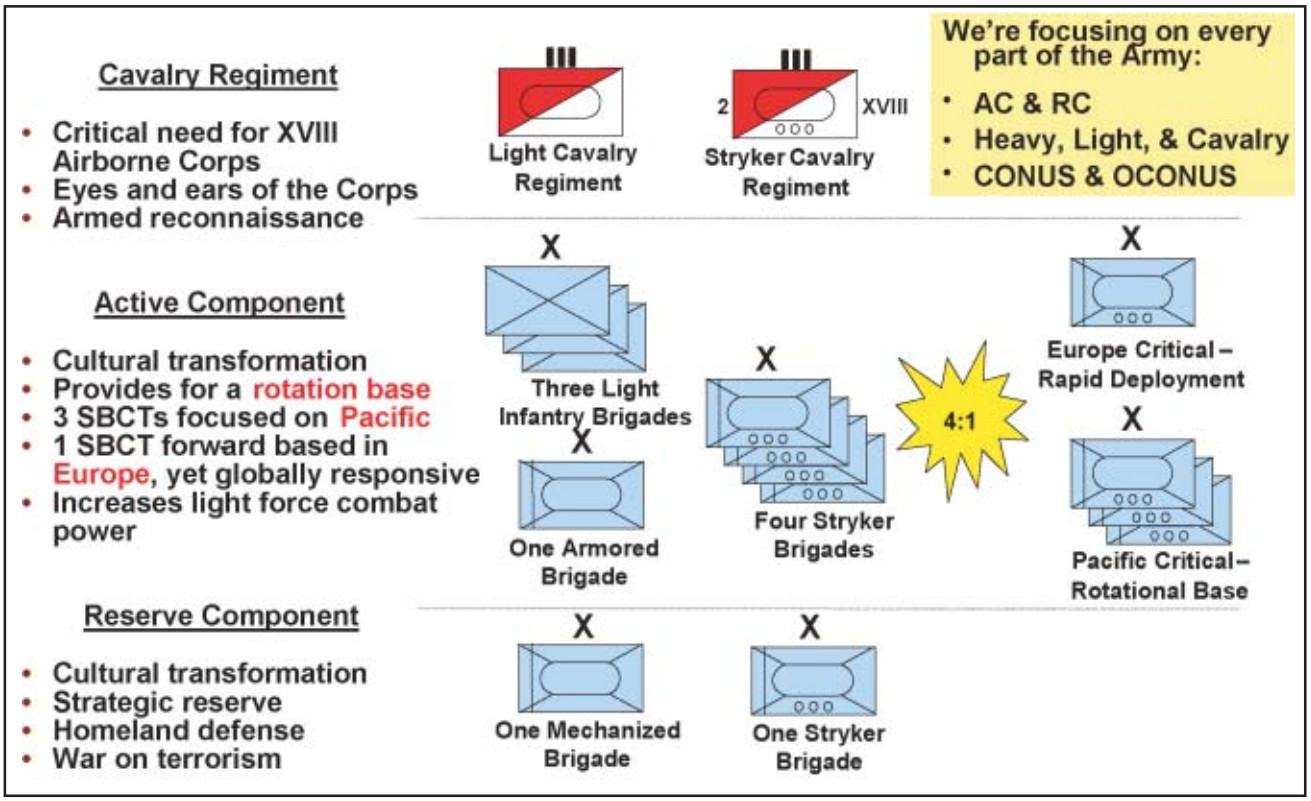

Figure 9. Why Six SBCTs

- 2nd Cavalry Regiment (Light), Fort Polk, LA.
- 2nd Brigade, 25th Infantry Division, Schofield Barracks, HI.
- 56th Brigade of the 28th Infantry Division (Mechanized), Pennsylvania Army National Guard.

SBCTs also allow the Army to balance today's training and wartime readiness requirements with the need to expose Soldiers to organizations they will lead in the Objective Force. The SBCTs are essential to changing the culture of the Army and present a rare opportunity to transform every part of the Army: Active and Reserve, light, heavy, cavalry, forward-deployed and U.S. stationed; and finally both the operational and institutional Army.

SBCTs and the Objective Force. Transforming the Legacy Force to the Objective Force introduces an operational risk associated with unit conversion, training, and attainment of an Objective Force operational capability. The enhanced warfighting capabilities of SBCTs greatly reduce that risk by providing a capability that is optimized for asymmetric crises we will most likely face this decade. SBCTs also provide the Army with other considerable benefits that will assist in the transformation to an Objective Force design.

First, converting units to an SBCT design has required the Army to develop and produce advanced warfighting doctrine that fully supports the rapid, distributed, and dispersed knowledge-based operational qualities of the SBCT. These qualities will be magnified in the Objective Force UA and will require the development of additional supporting doctrine.

By producing SBCT doctrine now, the Army has successfully laid a strong foundation for future doctrinal work.

Second, the application of SBCT doctrine at unit level has led SBCT forces to develop new tactics, techniques and procedures (TTPs) that are unlike those associated with the Army's Legacy Force. An example of this is found in reach-back operations, where Soldiers assigned to SBCTs use their joint information network, enabled by links to higher headquarters, to obtain and access required resources from home station or outside the operational area. This capability will continue to evolve and refine as the Army moves toward an Objective Force capability.

Third, the combined effects of rapid system procurement (Stryker Armored Vehicles), accelerated development of advanced warfighting doctrine and associated TTPs, distributed and dispersed operations enabled by networked capabilities, all integrated into a combined arms design down to company level, has caused a profound and needed cultural shift within the Army. This cultural change is a critical first step in the development of Soldiers and leaders who will fight in Objective Force units designed to excel in the nonlinear, asymmetric battlefield of the future.

Although SBCTs are an important bridge to the Objective Force, and will inform Objective Force design and doctrine, they do not possess Objective Force qualities. Two examples are found in the areas of lethality and survivability. While the Army has ensured SBCTs have tank-killing capability in close, compartmented urban environment; they still lack the sufficient lethality to operate at the higher end of the operational spectrum (in environments of open, rolling terrain against armor/anti-armor threats that are of necessity assigned to today's armored forces) without augmentation, particularly on the future battlefield where adversaries are likely to use advanced armor technologies. In the Objective Force, FCS-equipped UAs will feature a networked fires architecture enabled by advanced heavy weapons, launch systems and penetrators that will ensure the destruction of any potential armor system on the future battlefield with a high assurance of first-round hit. Several technologies such as the Compact Kinetic Energy Missile, Javelin P3I, and the electromagnetic gun are examples of potential Objective Force lethality not available to SBCTs and not engineered for integration into the Stryker platform. Other science and technology (S&T) lethality efforts with potential to be integrated into the FCS include a multi-role armament system; advanced warheads with miniaturized, multi-mode seekers; and development of solid-state lasers for both ground-to-ground and ground-to-air engagements.

Similarly, SBCTs do not have the same level of survivability that is planned for the Objective Force. This enhanced survivability will be derived from advanced C4ISR that provides the commander with unparalleled situational awareness, thereby allowing him to see, understand and act first, and if engaged, the ability to survive being acquired and fired at first. Ceramic armors and "smart" armor systems coupled with active protection systems are potential FCS components that will allow the UAs to fight and survive at the highest end of the operational spectrum. Other examples abound, to include ability of FCS-equipped UAs to exercise "battle command on-the-move" (an Objective Force concept) or drastically reduce logistical footprint via the use of onboard water generation, fuel efficiencies, greater reliability, use of precision munitions, and leveraging of advanced diagnostics and prognostics that will predict vehicle repair requirements before failure, thereby eliminating the need for stockpiles of spare parts.

The Army's plan and strategy to transform itself to an Objective Force is compelling. The Stryker Brigades are a critical component of that strategy. Designed to fill a near-term capabilities gap and provide the bridge from the Legacy to the Objective Force, the SBCT provides a Combatant Commander with an early entry combined arms force that is deployable on the U.S. Air Force family of tactical aircraft, lethal, survivable, and mobile that does not exist anywhere in the Nation's military today. Designed and optimized primarily for employment in SSCs in complex and urban terrain, confronting low-end to mid-range threats that may combine both conventional and asymmetric qualities, the SBCT is also capable of fighting at the higher end of the spectrum with augmentation. For the first time, the Army will have units that can enter complex urban environments, fight and win decisively with confidence. Stryker Brigades are required by the Nation's defense strategy and represent a total DOTMLPF solution that integrates new equipment with enhanced capabilities into a strategically responsive force design, all supported by new doctrine, TTPs, and enhancements to ranges and installation training facilities.

The Legacy Force—The Army Ready Today

Modernization and recapitalization of the current Army force, the Legacy Force, is at the heart of addressing readiness. The Legacy Force continues to provide the strategic insurance policy for the Army's responsibility to fight and win decisively against any threat while the Army transforms. Army Transformation timelines clearly show elements of the Legacy Force remaining within the Army's force structure for the next 25-30 years. Within that context, the Army will continue to rely upon the Legacy Force to fight and win conflicts well into the fielding of the Objective Force, which will begin by the end of this decade. For that reason, some resources must be devoted toward the recapitalization and limited modernization of the Legacy Force while the Army successfully transforms itself. The Army will direct to the Legacy Force, however, only the resources needed to maintain combat superiority and rapid strategic power projection.

Figure 10. Legacy Force in Action

The Army recognizes the reality of resource constraints and is prepared to manage risk in the current force to allow the investment required for the future force. This risk, however, must be continually reviewed to ensure that current readiness requirements are always met, especially in light of critical and often unexpected needs that arise, such as the ongoing Global War on Terrorism and other contingency operations.

An important element of the Legacy Force is the requirement for an offensive or counteroffensive capability for use in a major conflict. Assembling the ground force required for decisive counteroffensive operations anywhere in the world calls for a three-division corps, with an armored cavalry regiment. To meet this need, the Army is selectively modernizing and recapitalizing portions of III Corps (designated as the Army's Counterattack Corps), including two active duty heavy divisions: the 1st Cavalry Division and the 4th Infantry Division. Also included are

those echelons above division (EAD) units assigned to III Corps, including RC units.

Although the Army recognizes the requirement to modernize the entire Counterattack Corps, it has decided in PB04 to only fund modernization for those two heavy divisions noted above. This decision allowed the Army to apply additional resources to Objective Force technologies. The resulting risk will be mitigated by redistribution of limited Army Battle Command System (ABCS) components, which will ensure interoperability throughout the Counterattack Corps.

The insertion of digital technology and better knowledge management systems will provide modernized Legacy Force organizations the warfighting capability to see the battlefield, anticipate requirements and handle transitions that will characterize the Objective Force. Therefore, with the upgrade of the Legacy Force, the Army's Modernization Strategy begins to develop future leaders who can employ the Objective Force in ways that maximize its potential.

The forward-deployed and early-deploying contingency forces will be recapitalized and modernized as needed with available resources. Reserve Component forces will maintain capabilities compatible with the units they support through the selective cascading of equipment from the Active Component (AC). Reductions in the overall Legacy Force recapitalization and modernization effort, resulting from difficult decisions made to fully fund Objective and Interim Force programs, will delay the modernization of the RC forces that rely on cascading. This delay is a necessary risk required to meet the Army's Vision of a future transformed force and to support overall DoD transformational goals.

Logistics Transformation

The Sustainment Vision outlined in the *Objective Force 2015* White Paper encompasses the three Logistics Transformation goals generated from the Army Vision in 1999: (1) enhance strategic mobility/ deployability to meet deployment timelines, (2) reduce the sustainment footprint, and (3) reduce the cost of logistics while maintaining warfighting capability and readiness. The Sustainment Vision then identified four capstone concepts intended to channel the myriad of Logistics Transformation actions and systematically integrate these actions into the Transformation Campaign Plan (TCP). These four capstone concepts are (1) Joint Logistics Corporate Enterprise (JLCE), (2) Distribution Based Logistics (DBL), (3) Demand Reduction, and (4) Performance Based Logistics (PBL). Every milestone, event, and initiative associated with Logistics Transformation will help achieve one of these concepts in support of the three principal goals. The Sustainment Vision 2015 end state is a seamless and transparent logistics corporate enterprise that integrates the collective technical superiority and intellectual capital of the U.S. Army, in concert with the industrial sector, other Services and joint organizations, and other government agencies to build and sustain combat power for the Objective Force.

The first concept addresses the establishment of a JLCE characterized by a Common Logistics Operating Environment (CLOE) that integrates Army tactical logistics automation systems with joint and national logistics automation systems. The JLCE takes a centralized management approach to executing best business practices that will increase capability and free commanders from distracting sustainment decisions. Distribution Based Logistics (DBL) builds on the first

concept by integrating supply, services, transportation, and information systems from the strategic industrial base to the tactical level to speed delivery of support to the warfighter and to reduce the deployed footprint. The premise of DBL is to optimize the distribution system by focusing on velocity over mass. This focus greatly reduces stockpiles through enhanced visibility, capacity, and control of assets in the distribution pipeline. It also involves greater efficiencies and capabilities in the battlespace. Demand Reduction is intended to suppress the appetite for logistics requirements through commonality and discipline. It involves developing and fielding S&T initiatives that reduce demand and improve efficiency in the big drivers of logistics requirement— fuel, water, ammunition, and maintenance. PBL is a holistic weapon system support concept where responsibility and accountability for meeting warfighter requirements is established early in the life cycle of a system. PBL focuses on buying results not resources (e.g., a higher expectation of operational availability based on more accurate diagnosis before failure to eliminate traditional stockage lists). It is a DoD-directed strategy for weapon system product support being used for the FCS in the Objective Force.

The CSA recognized that without a LogisticsTransformation, there would be no Army Transformation. As a result, the CSA activated the Logistics Transformation Task Force to develop a campaign to achieve the three Logistics Transformation goals and to identify revisions in cumbersome logistics processes and revolutionary initiatives that would exploit advances in technology to get the change process underway. In January 2003, the Logistics Transformation Working Group identified key enablers to support logistics transformation. These items were presented as budget planning focus items of interest for FY05-09. They are detailed further in Annex D, Materiel, in support of the defense goals. They also have a direct relationship to the four capstone concepts. Materiel enablers supporting Logistics Transformation are found in Annex D to this Modernization Plan. Some of those systems include Global Combat Support System-Army (GCSS-A), Future Tactical Truck System (FTTS), and the Movement Tracking System MTS).

Industrial Base Modernization

A modern industrial base is essential to the overall success of Army Logistics Transformation. The Army Materiel Command (AMC) envisions the industrial base as a complementary and synergistic mix of commercial and organic industrial base capabilities and capacity. These capabilities must be maintained in modern operating condition to ensure quality and enhance productivity, as well as encourage public-private partnerships to include investment opportunities for modernization.

The organic industrial base consists of Army-owned arsenals, maintenance depots, and ammunition plants. Given the Army's national defense mission, Title 10 responsibilities to support other Services, the unique characteristics of some of its equipment and the demand for readily available replacements, it is necessary to maintain certain industrial capabilities within the Army. Using partnership relationships with industry and applying innovative technologies to production and maintenance processes, the Army can transform its industrial base efforts into the future. This will enable the Army's industrial base to be effective and responsive to support the future Objective Force as well as continue to sustain current operations.

The Army's Transformation process must present a balanced approach to the Objective Force. It not only must encompass the development and procurement of combat systems and capabilities, but must also be balanced with an effective logistical support system and responsive industrial base.

Exercises and Experimentation

As part of the overall Transformation process, the Army will continue to rigorously evaluate concepts and technology in both joint and Army experimentation. This experimentation will play a key role in shaping Transformation and in demonstrating the capabilities that it will bring to the Joint Force in the future. U.S. Joint Forces Command (JFCOM) is the executive agent for joint experimentation with future joint concepts that the Services will explore.

The Army Transformation Experimentation Campaign Plan is the vehicle to leverage and integrate the work at multiple locations—battle labs, research labs, the TRADOC Analysis Center, the Center for Army Analysis, and other internal and external agencies. The Army Transformation Wargame is the capstone Army effort in this regard, and it is an annual event that tests major aspects of the transforming force, from organization structure and deployment requirements to battlefield maneuverability and firepower. Recent emphasis has been on a set of experiments to assist in the development of the UE, the future tactical and operational warfighting echelons of the Objective Force.

The Army's Transformation Experimentation Campaign Plan is also the means of linking Army Transformation as well as aligning it with JFCOM's Joint Experimentation Campaign Plan. The Army works directly with the JFCOM staff to ensure that Army Objective Force and joint experimentation supports landpower operational concepts, capabilities, and technology innovations.

In another important area of experimentation, the Army has been conducting operational prototyping on a small but significant scale. Along with the Navy, Marine Corps, Coast Guard, and Joint Special Operations Forces, the Army is experimenting with high-speed sealift operations. This is a highly beneficial means of leveraging available technologies that have direct applicability to the Army during Transformation as well as to the overall Joint Force. Other similar examples have included the use of leased, surrogate vessels to assist in the development of tactics, techniques, and procedures for the SBCTs during their initial fielding.

Other critical experimentation efforts have focused on the benefits of digitization initiatives in both the Legacy and Interim Forces. The Division Capstone Exercise (DCX), which was conducted in two phases in 2001, demonstrated the enhanced capabilities enabled by new warfighting doctrine, structure and systems. The results of this exercise particularly revealed the important additive capability that enhanced C4ISR brought to existing Legacy Force and provided key insights for further development for future Objective Force units.

While the Army's new SBCT formations are not intended as an experimental force, the Army's leadership has stated that such units, starting with the initial SBCTs at Fort Lewis, WA, may be made available for Army and joint experiments. These SBCTs are expected to have an important role as a "bridge" to future Objective Force capabilities that will eventually be portrayed in Army and joint experiments during the Transformation process. The initial such use of SBCT units, using the newly deployed Stryker combat vehicle, took place

during Millennium Challenge 2002 (MC02), the highly successful joint experiment held at multiple locations throughout the United States. During MC02, the Army conducted its own supporting experiment, Army Transformation Experiment 2002 (ATEx02), which tested the benefit of advanced enablers on the overall capabilities of the Joint Force during Transformation.

MC02 was particularly important for Army Transformation since it represented the initial opportunity to evaluate the performance of the new Stryker vehicles in a realistic joint environment. During MC02, a company of Strykers, only four weeks after completing new equipment training, deployed by C-17 strategic airlift from Fort Lewis to an intermediate staging base in California. From there, they were transloaded onto C-130s and airlifted directly into a dirt field at the National Training Center. Subsequently, they were redeployed to another dirt airfield where they conducted a joint interoperability exercise with Marine Corps units. Eventually, they were redeployed to Fort Lewis by a High Speed Vessel (HSV) to culminate their participation in the exercise. While the overall results of MC02 are still being analyzed for incorporation in future doctrine and leader development, the Army was extremely pleased with the overall operational performance of the Stryker in its first field exercise with the Joint Force. Its enhanced deployability and mobility were particularly noteworthy, as was its readiness rate and Soldier support. Additionally, the SBCT demonstrated considerable additive capability in the form of its enhanced C4ISR architecture. Overall, MC02 represented a major milestone for Army Transformation, and Army and joint experimentation and exercises will continue to play a major role throughout the transformational process.

Figure 11. MC02 Lessons Learned

Army Modernization

Modernization is a continuous process of integrating new doctrine, organizations, training, materiel, leader development, personnel, and facilities to develop and field warfighting capabilities for the Army in its mission to fulfill its responsibilities to the Nation in executing the National Security Strategy and all assigned missions. Modernization activities are facilitated and optimized by sound Modernization and Investment Strategies that are specifically designed to implement the Army's Transformation process. The Modernization and Investment Strategies also establish common terms of reference for all modernization activities and, very importantly, provide clear priorities and focus for the allocation of resources for equipment expenditures. The overall Army Modernization Strategy remains focused directly on support to Transformation to ensure that those capabilities essential for the future are being developed. Simultaneously, it provides those necessary capabilities for the current force, which remains the foundation of the Army's readiness to fight and win decisively against any threat.

The Investment Strategy in support of modernization describes the process used in deciding how to allocate monies across competing priorities in order to obtain the best capability for each dollar spent.

Modernization Strategy—Balanced Investment and Risk

In support of the overall goal of implementing Transformation of the Army into a more responsive and capable force for the future, the Army has developed a coordinated and comprehensive strategy of integrating all its efforts and programs across the DOTMLPF toward the goal of equipping and organizing forces. This strategy can be described best as one of "balanced modernization," which seeks to develop and field combat-capable units through an appropriate mix of selective procurement and fielding of new equipment (modernization), rebuilding and upgrading of key existing equipment (recapitalization), and preserving needed elements of current equipment (maintenance). Modernization programs are placed into three basic categories and are then subcategorized based upon the force they are fielded to support.

These Modernization Strategy categories are:

- Modernization—the development and/or procurement of new systems with improved warfighting capabilities (such as the Comanche helicopter, the Stryker, and the Tactical Unmanned Aerial Vehicle).

- Recapitalization—the rebuild and selected upgrade of currently fielded systems to ensure operational readiness and a zero-time/zero-mile system.

- Maintain—repair or replacement of end items, parts, assemblies, and subassemblies that wear or break.

As instruments for the most efficient use of these various means, the Army also has two important processes—Unit Set Fielding and Software Blocking—which are designed to ensure achievement of the greatest combat capability across the force throughout the overall modernization process while

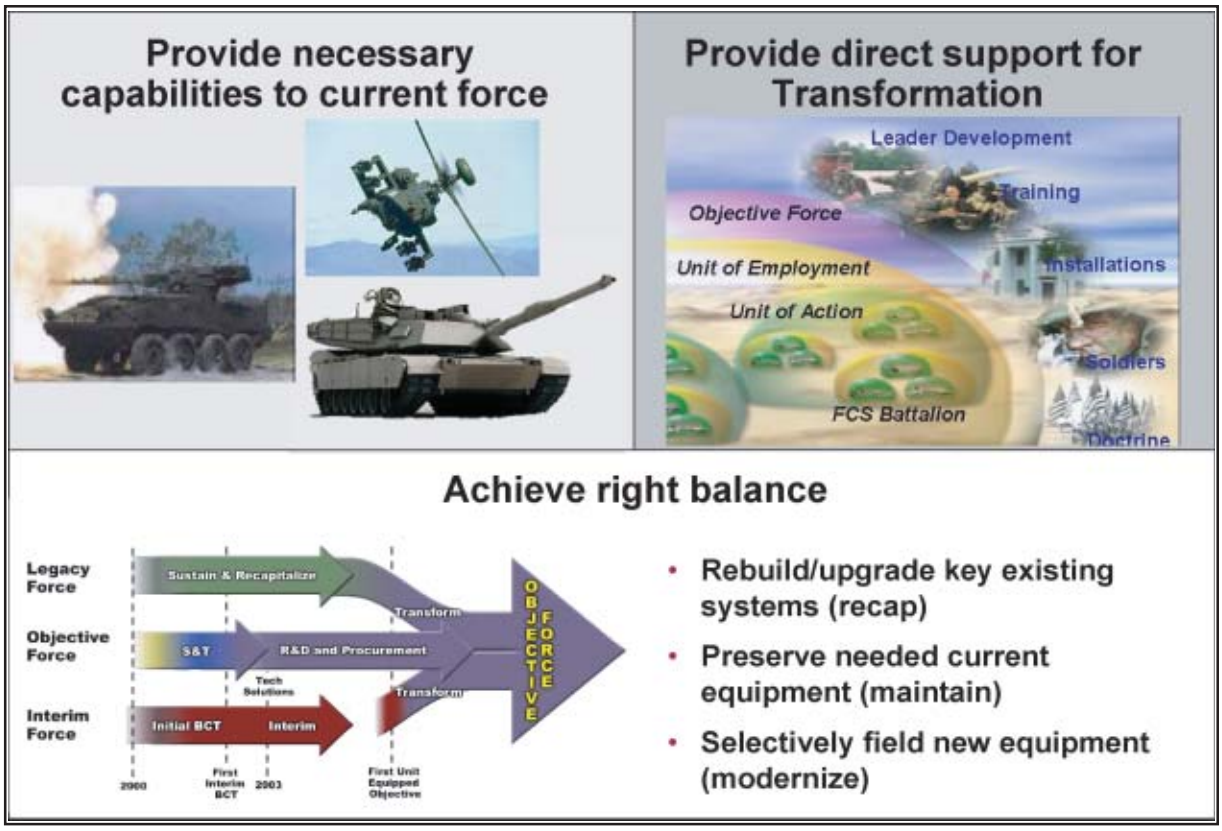

Figure 12. Modernization Strategy

maintaining the highest level of readiness and the lowest feasible expenditure of resources.

The Modernization Strategy also consists of the following three components, which help define a clearer focus for its implementation:

- Maintaining and improving essential warfighting capabilities of the existing forces to preserve military superiority for all possible missions.

- Fielding of immediate operational capabilities in a more responsive yet still lethal force by organizing and equipping brigade-sized units outfitted with a family of internetted Stryker combat vehicles and other state-of-the-art, off-the-shelf technologies.

- S&T efforts to enable timely fielding of the future Objective Force and, in particular, the FCS, which will be the foundation of that force.

The Army ultimately will have a common organizational design for all components—Active, Guard, and Reserve—built around a new generation of systems that are deployable on C-130-like aircraft, though with optimum deployment on C-17 aircraft and fast sealift. The desired end state is a more strategically responsive Army that is more capable of dominance along the full spectrum of military operations in a joint and combined environment.

Balancing Across the DOTMLPF

Army Transformation mandates a comprehensive examination of the interrelationships between doctrine, organizations, training, materiel, leader

development, personnel, and facilities. As the Army fields new capabilities to the Legacy Force, begins the fielding of the Interim Force and develops the Objective Force, it must optimize investments by ensuring the proper synchronization between DOTMLPF requirements and DOTMLPF solutions.

Today, the Army has in place at Fort Lewis a special team of personnel who are crafting the doctrine, tactics, techniques and procedures for the SBCTs. Concurrently, they are examining the doctrine's potential application for an Objective Force designed to see first, understand first, act first and finish decisively.

The Army's Training and Doctrine Command, conducting a comprehensive review of Army training, is currently formulating a new Training and Leader Development Model that is based on Army culture: established standards for Soldiers, leaders and units; feedback at all levels from the individual Soldier to Headquarters, Department of the Army (HQDA); and a balanced operational and educational experience through the proper rotation and sequencing of assignments, schooling, and self-development.

Transforming the Army has placed new demands on how leaders and Soldiers are managed throughout the force. With over one million soldiers geographically dispersed across seven continents, the Army's personnel community is developing new tools that will ensure the right Soldiers with the right skill sets are assigned to the proper units in a timely manner to ensure combat readiness. Enhanced personnel databases, leveraging web-based technologies, and implementing best business practices are examples of how the Army intends to improve the management of its military and civilian personnel.

Modernizing the Army with new systems and equipment is a critical undertaking that consumes vital and limited resources. Only by ensuring that equipment fielding is coordinated and synchronized with total requirements can the Army be assured that resources are being used in a wise and cost-effective manner. The annexes attached to the *2003 Army Modernization Plan* provide a comprehensive and succinct review of the progress being made in modernizing across the DOTMLPF as the Army transforms itself to the Objective Force.

Modernization Priorities

To achieve balanced readiness of the force over time, the Army prioritizes its investment of limited resources. From a requirements perspective, priority is to maintain the readiness of the current force, then fielding the capabilities of the Stryker Brigades, and then to modernizing into future formations. From a resourcing perspective, however, the Army is committed to preserving the essential warfighting capabilities of the current force, but will accept operational risk in this force in order to devote funding energy toward the future Objective Force. A key component to preserving these warfighting capabilities will be achieved through the fielding of SBCTs. The number one priority for Army modernization investments is the development of the future Objective Force and particularly the FCS, the foundation of the future transformed Army. Initially that investment takes the form of S&T efforts to explore, identify, and develop the revolutionary technologies needed to make the FCS a reality. Of the Army's total S&T funding in the FYDP, almost 98 percent directly supports programs needed to develop Objective Force technologies. This level of investment also meets the intent of DoD guidance for real growth over PB03. In addition to these S&T efforts, the Army is also devoting

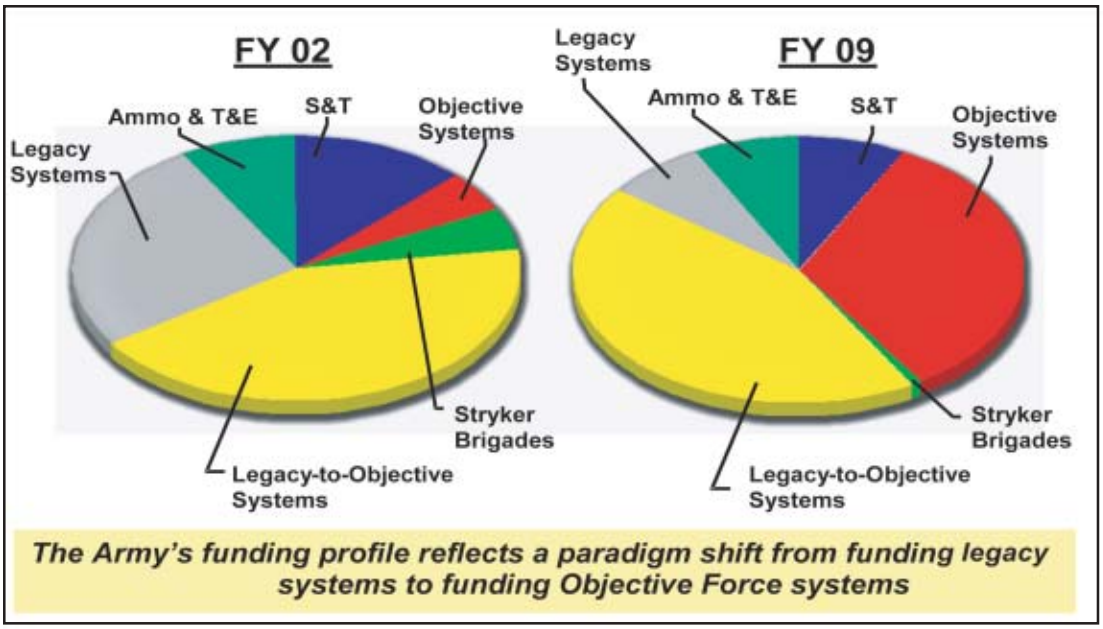

Figure 13. Changing Priorities

a substantial and increasing amount of its RDA funding to fielding systems that will be fully integrated in the Objective Force.

Developing and fielding the future Objective Force is the Army's modernization investment priority, and 70 percent of RDA funding in the FY04-09 Plan supports this purpose. Fully 20 percent of RDA is directly earmarked for systems that will be integral to the Objective Force. Over 50 percent of total RDA is earmarked for Legacy Force systems that will transition to and remain part of the Objective Force, and only 16 percent of RDA funding will be used by systems associated solely with the current Legacy Force. The preponderance of funding focused on the Objective Force will continue to increase over time as the Army progresses in the Transformation process.
The focus on the future force is, in fact, enabled by the Army's continued investment in the readiness and capability of the Legacy Force and in the fielding of the smaller Interim Force, for which about 4 percent of RDA funding is devoted. As the Objective Force units are fielded and become operationally capable, beginning in 2010, the change in investments will accentuate this shift even further. In recent years, the Army has begun a paradigm shift in its investments toward an increasing emphasis on leap-ahead technologies needed for the future. This shift will continue in the coming years, though the Army will still have to balance sufficient investments in near-term capabilities until future formations and systems can be fielded.

To accelerate Transformation to the future Objective Force, the Army has accepted additional risk by focusing its modernization efforts on selected units and capabilities. A key example of this focus is the modernization of Army Special Operations Forces, which because of their unique asymmetrical nature and essential role in the Global War on Terrorism and other contingencies warrant particular priority and technological improvement. These forces will continue to leverage the Army's developing technology as well as make available their own unique technological advancements to conventional Army forces.

Enabling Processes

As already mentioned, there are two important processes that are integral to the execution of the Army's Modernization Strategy—Unit Set Fielding and Software Blocking. In addition to these processes, the Army makes extensive use of simulation and modeling as well as of studies and analyses to help establish priorities and make informed choices throughout the Transformation process. Collectively, all of these processes and supporting tools are integral to the success of Transformation and an effective and efficient Modernization Strategy.

Unit Set Fielding (USF)

Under the Army's previous modernization/ fielding process, units would receive multiple, separate, and unsynchronized issuances of individual systems throughout an extensive period of time. This approach resulted in units having a difficult time maintaining unit readiness and achieving optimum effectiveness of the newly issued systems. Additionally, equipment was often fielded without accounting for corresponding training related assets such as improved range facilities. As the Army moves forward with modernization and Transformation efforts, however, the environment must shift from a focus on fielding legacy stand-alone systems to system-of-systems configured in unit sets. The Army is synchronizing requirements generation, materiel development and acquisition, manpower and personnel, funding, testing, training, fielding, transfer, sustainment, and support facilities within a system of systems context.

The key to managing unit sets of equipment is to ensure synchronization of all DOTMLPF modernization activities required to field and support the individual systems which comprise unit sets. An Army configuration management process is required to synchronize, test and evaluate, and certify hardware and software unit sets and associated training systems. The solution to this challenge is the implementation of a comprehensive USF process.

USF is a disciplined modernization strategy that results in fielding of an increased warfighting capability and will be used in support of the three paths (Legacy, Interim and Objective) of Army Transformation. The USF process drives the synchronization of multiple systems fielding occurring during a condensed fielding window to minimize the impact on force readiness, achieve full operational capability quicker, and provide the Army with doctrine and standards-based units. While USF represents an improved modernization and fielding strategy, this process may not be practical for all units and components in brigade sets, particularly in the RC. Therefore, USF for some units may be executed at battalion, separate company or team/detachment.

USF is currently being executed to modernize the 1st Cavalry Division (Legacy Force) and 1st Brigade, 25th Infantry Division (SBCT #2, Interim Force). USF will be used to field all SBCTs as well as other selected light and heavy forces. The Army is also developing a comprehensive USF strategy for the Objective Force. The first Objective Force UA, scheduled for an initial operational capability (IOC) in FY10, will use the USF process to field system-of-systems capabilities.

For a unit to realize its full intended capability, corresponding training aids, devices, simulators and simulations (TADSS) must also be integrated into the unit set. The facilities to operate, maintain, and train the equipment must likewise be in place when the set is delivered to the unit. The timeline for the overall execution of USF is portrayed in the draft Army

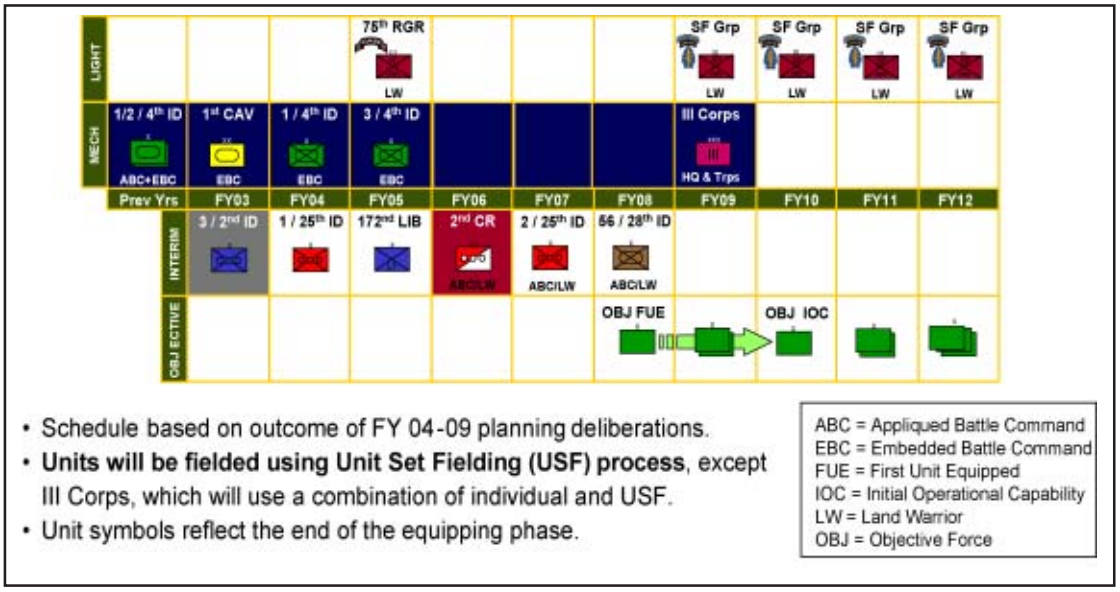

Figure 14. Army Modernization Schedule

Modernization Schedule (AMS) depicted in Figure 14.

Software Blocking (SWB)

SWB is an acquisition policy and disciplined process through which the Army achieves and sustains an integrated SoS warfighting capability. SWB is a critical enabler of USF.

SWB as an acquisition process improvement is consistent with the Clinger-Cohen Act of 1996 and DoD 5000. The framework embodied in the SWB policy harmonizes and synchronizes system software developments and upgrades. It is designed to focus the acquisition process on a disciplined approach for achieving interoperability, commonality, and synergistic functionality. In conjunction with USF, SWB is a conduit for executing Army Transformation.

Under SWB, the Army is making a commitment to divest itself of its traditional systems-centric approach to embrace an SoS capability that supports each element of DOTMLPF. This will allow the Army to make smart decisions based on the impact to warfighting capability vice systems. Under the policy, systems include new/upgraded core battlefield systems, trainers, stimulators, test and instrumentation, and simulators needed to achieve an integrated capability across all elements of DOTMLPF. SWB applies to all Army systems except those business systems that do not exchange information with tactical C4ISR systems and weapon systems.

SWB represents a necessary evolution along the path of acquisition reform. SWB lowers the artificial barrier between elements within the acquisition process that inhibit our ability to develop, test, train, and sustain a synergistic warfighting capability. Through SWB the acquisition process focuses on a total warfighting capability rather than individual systems.

SWB is an Objective Force process that is being implemented to enhance Legacy and Interim Force operational capability. This means it will take a few iterations before SWB is fully matured. Thus, SWB provides the paradigm through which Legacy systems will transition from their stovepipe implementations in support of *Joint Vision 2020* objectives.

Joint Venture 2020 requires the insertion of innovations in information technology. SWB provides the vehicle for tuning the Army's acquisition efforts towards developing the interdependent application necessary to achieve the SoS warfighting capability essential to Dominant Maneuver, Precision Engagement, Focused Logistics, and Full Dimensional Protection. SWB ensures that the critical C4ISR, weapon systems, and SoS network infrastructure are matured in a manner that enhances overall operational warfighting capability while at the same time maximizing the operational effectiveness of individual systems. In a resource-constrained environment, priorities are targeted at maximizing total capability. For SWB, this will require a sustainment of resources from requirements through fielding.

Studies and Analysis

Army Transformation must successfully structure, organize, and equip the Army for the challenges of the 21st century. This is an ambitious goal, and it will not be achieved without well-analyzed investments, in both financial and intellectual terms. Managing the Transformation process to produce irreversible momentum towards the Army of greatest effectiveness in the joint warfight throughout the spectrum of possible operations, for the resources available, will require continuous, close attention to analyzing and defining the developing world situation, and developing material solutions to the Army's requirements to support modernization decisions as systems progress through the acquisition process. Analysis must also determine and justify the expenditures that will be necessary to produce the combat-capable Army that the United States

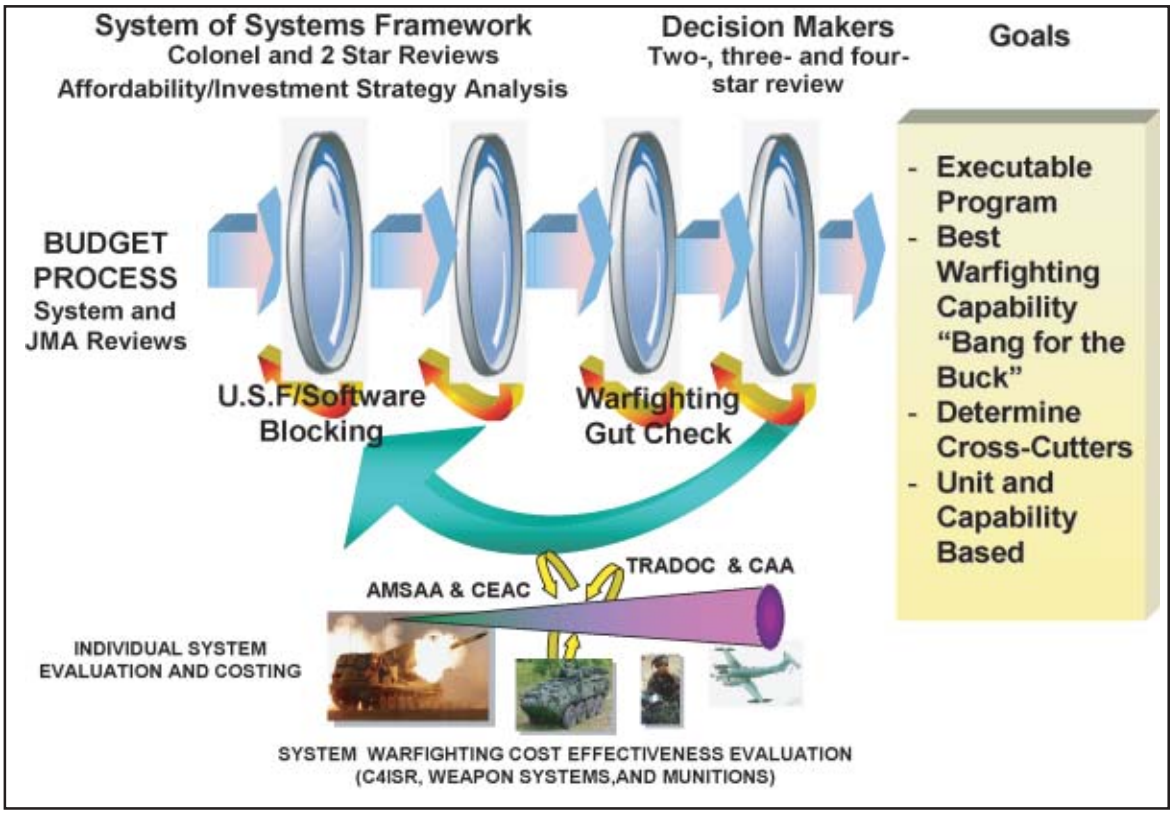

Figure 15. Investment Assessment Process

will need for the challenges of the 21st century. Robust analyses and studies support timely and correct decisions, increase the correspondence of requirements for strategic, operational, and tactical conditions, expand technology trade space, permit the effective utilization of past modernization investments, and ensure maximally effective system integration within the Army's SoS framework. Army analytical efforts will provide significant assistance in the materiel development and selection process by balancing risk among schedule, performance, and affordability. These analytical efforts will also identify any specific modernization and recapitalization initiatives required to sustain Legacy Force superiority with acceptable risk while the Army focuses resources on enabling the Objective Force. The Army analytical capability ensures we balance cost, technology, and warfighting needs in support of the development of an effective modernization program for the Legacy, Interim, and Objective Forces.

Although the Army uses a variety of analyses and studies to support its decision makers, the tools described below represent the most commonly employed. These samples include: the System of Systems Framework (SSF), Warfighting Alternative Analysis Requirements and Resources (WA2R2), Warfighting Lens Analysis (WFLA), Continuous Early Validation (CEaVa), and Value Added Analysis (VAA) (See Figure 15).

The System of Systems Framework is an institutionalized process, synchronized with the budget planning process, to provide insights to the Army leadership for resource decisions and to support/refute external studies. The Army conducts analysis and studies in order to determine the optimum mix of systems that will allow us to build and maintain multifunctional, combat-capable units within an SoS framework. Analysis allows the Army to balance risk between schedule, performance, and affordability within and across Joint Mission Areas (JMA). Objective analysis provides a rigorous, quantitative, holistic approach to system acquisition. The Army uses the results of studies to support the development of systems and to defend Army programs during budget development and defense reviews.

Warfighting Alternative Analysis Requirements and Resources. The Army requires analysis to review warfighting requirements for the Army during Transformation with a view towards the potential impacts on required capabilities and resource reallocation to support Transformation initiatives. WA2R2 provides an updated assessment of the Army's warfighting requirements, integrated capabilities and value added in the future. The analysis provides insights and an analytical underpinning for building systems and munitions requirements into future programmatic reviews and defending Army requirements. WA2R2 gives the senior Army leadership options that constitute the best mix of cost effectiveness, operational effectiveness and minimized risk, and identifies those cross-cutting systems that best integrate to achieve decisive victory.

Warfighting Lens Analysis. WFLA is an analytically-based process by which warfighter recommendations on the Army's battlefield capabilities are incorporated into the Army's budget planning process. It prioritizes weapon and training systems requirements, and the material solutions that best fulfill those requirements, to ensure warfighting overmatch capability within available resources.

Continuous Early Validation. CEaVa is a decision support system that will aid decision makers and analysts in evaluating acquisition programs. CEaVa gives decision makers timely visibility on the status and issues of a

program to permit timely decision. CEaVa will stabilize the problem statement by validating key performance parameters or critical requirements relative to the ever-changing environment. CEaVa makes it clear that the user and developer are solving the right problem. Additionally, it increases the likelihood of producing the correct system on time. CEaVa is the tool that has been selected by the Deputy Chief of Staff for Programs, G8, to conduct frequent assessments of all Army procurement programs.

Value Added Analysis. VAA provides decision makers an analytical approach for the evaluation and prioritization of competing alternatives to support the development of a balanced and effective Army RDA program. The study purpose is to identify and analyze marginal costs and benefits of weapon systems and develop feasible, affordable modernization investment strategies in support of the Army program planning. The objectives are to produce investment strategies for major weapon systems that maximize force effectiveness subject to constraints on budget, force structure, and production capabilities and to develop a quick-reaction analysis tool to address modernization questions during program execution.

Modeling and Simulation

The Army uses modeling and simulation (M&S) techniques and tools that include emulators, prototypes, simulators, stimulators that are, either statically or over time, used to enable managerial or technical decisions. The Army uses models of real systems and conducts experiments within M&S environments to understand the system behavior or to evaluate various strategies for the operation of the system. The benefit to the Army is that it improves its combat readiness posture, gains valuable insight into various courses of action, and may reduce weapon systems cost, performance, or schedule risk.

Management of Army M&S is executed through domains of mission activity that follow functional, not organizational, lines. The three domains are: Advanced Concepts and Requirements (ACR); Research, Development, and Acquisition (RDA); and Training, Exercises, and Military Operations (TEMO). Domain managers, designated at HQDA, coordinate M&S activities and develop and maintain supporting plans for their domains to include Domain Management Plans and Domain Investment Plans.

The Army is modernizing its M&S architecture and supporting infrastructure. M&S infrastructure is the underlying base or foundation of assets available to support the development and maintenance of M&S. Infrastructure includes the basic facilities, equipment, installations, and services needed for the development and maintenance of a system. It also includes personnel performing development or maintenance, communications, networks, architectures, standards, protocols, analyses, and information resource repositories.

Army S&T investments in M&S support the Defense Transformation goals of *Project and Sustain U.S. Forces,* and *Warfighter Readiness, Survivability, and Sustainment.* The objective of these Army investments is to demonstrate training and leader development M&S technologies that will transform the way the Army develops weapon systems, trains Soldiers and units, develops leaders and performs combat mission rehearsals. Key technologies include: simulation software, decision aids, architectures for immersive environments, and algorithms for virtual and constructive simulation environments. The synergies of these technologies will enable

environments to create adaptive, high-performing leaders and soldiers. Potential operational payoffs are tools and techniques to improved battlefield performance, more informed decisions, and reduced time and cost. Embedded training in platforms and Soldier ensembles will provide en route learning for 30 percent of Army mission essential tasks. Advanced leader training and development technologies will provide virtual complex decision-making experiences, enabling better and faster decisions in actual combat environments. Advanced simulation is essential for realistic training with future combat systems whose full performance (range, lethality, and environmental impact) cannot be experienced in current training environments. Goals for this program are to reduce training costs by 30 percent through virtual experiences—focusing live training on essential tasks that require hands-on experience.

To help achieve these goals, the Army is developing a robust M&S architecture through two S&T objectives: the Joint Virtual Battlespace and the Virtual Distributed Laboratory for Modeling and Simulation. The combination of these efforts will provide robust, networked, live, virtual, and constructive simulation environments that will revolutionize the way the Army trains, rehearses missions, develops leaders, and acquires weapon systems. Research is focused on modeling emerging critical mission areas, extending ability to use M&S in areas such as test and evaluation (T&E), and reducing cost and time to field new M&S systems. Research will provide technology for comprehensive and systematic joint training systems focused on the future operational requirements of the Combatant Commanders. The potential operational payoffs of the S&T M&S investment program are the development of tools and techniques to modernize the force faster, to better prepare Soldiers and units for combat, and to provide technology for a seamless integrated live, virtual, and constructive joint simulation environment. New simulation tools and embedded training systems will utilize databases that are compatible and integrated with Army command and control systems.

M&S investments will provide new ways to prepare Soldiers and units for combat by providing simulations and training systems integrated directly into operational systems to support war-planning and course-of-action analyses, and to help prepare Soldiers to fight in unfamiliar, fast-paced, dynamic environments. The future integrated live and synthetic environment provides the foundation for a new, adaptable joint national training capability formed from existing military testing areas and training ranges capable of supporting advanced beyond-line-of-sight weapon systems. Advanced simulation and augmented reality enables the development of future urban combat training centers for asymmetric warfare and unconventional operations. Joint exercises and experimentation will leverage this new environment to test new concepts, doctrine, force structure, tactics, and operations.

The term "collaborative environment" is an enduring collection of subject matter experts supported by interoperable tools and data bases, authoritative information resources, and product/process models that are focused on a common domain or set of problems. The Army is using collaborative environment concepts in development of its Future Combat Systems under the Simulation and Modeling for Acquisition, Requirements and Training (SMART) Concept. SMART capitalizes on M&S tools and technologies to address system development, operational readiness, and life-cycle cost and is accomplished through the

collaborative efforts of the requirements, training and operations, and acquisition communities. The Army's analysis community, for example, is widely dispersed, both geographically and organizationally. Concept analysis does not occur in the vacuum of only one location or organization; there is a need to collaborate with the other organizations and domains. To share information, the analysis community uses a common framework (scenarios, data, and M&S tools) to distribute studies and access resources (people, information, data) instead of maintaining separate, duplicative capabilities.

Developing and preparing land forces for future military operations is a core competency of the institutional Army. DOTMLPF considerations are important in the development of concepts for the Army and play a major role in determining its future composition. The processes of developing strategic, warfighting, operational and functional concepts flow from the DOTMLPF analyses conducted within the domain. Its principal focus is to provide insights and quantitative and qualitative data to support analyses for planning and evaluating these forces as they will be employed in military operations at all levels and combat intensities, currently and in the future, and across the spectrum of conflict and peacetime engagement. Other types of analyses are warfighting experiments; analysis of alternatives (AoA) studies; personnel, equipment and ammunition requirement determination; doctrine and concept development; force modernization alternative evaluation; manpower and resource management program design; potential threat estimation; and planning for mobilization and deployment and sustainment of improved mobile and flexible forces to meet those threats.

The Army will use the SMART concept and modern M&S tools in collaborative environments to understand current and emerging operational environments and required warfighting capabilities. Emerging and future concepts will employ technologies, unit constructs, tactics, and procedures unlike those of today's Army. Because these concepts and system designs are not fully mature, the Army must obtain M&S tools to develop and analyze these concepts so developers and engineers can refine concepts and designs at a much faster pace and with more iterations, instead of having to build physical prototypes, experiment in the real world, redesign, then build more physical prototypes. Having all stakeholders participate using M&S in collaborative environments greatly increases efficiency and effectiveness.

The Army will focus investment efforts on capabilities to represent present and proposed technology, equipment, concepts, and doctrine of friendly, neutral and threat elements in the following subject areas:

- Strategic analyses.
- C4I and information fusion.
- Weapons of Mass Destruction (WMD).
- Fighting in complex and urban terrain.
- Homeland security.
- Small-scale contingencies (SSC).
- Space operations.
- Life-cycle cost modeling.

The Army is investing in training Army leadership and its workforce to better understand and implement the effective use of M&S tools and techniques. Training will include distributed learning as well as on-site training. The benefit

to the Army is clear and unambiguous guidance to ensure maximum collaboration in using M&S, a better understanding of requirements, reduced procurement lead times, and reduced cost of system procurement. All this leads to the acquisition of better weapon systems at a fraction of the time and leads to the following benefits:

- **Elimination of unnecessary duplication**. While many missions require tailored M&S applications, developing a unique simulation for every need is no longer required.

- **Opportunities for Reuse**. All M&S managers, developers, and users must plan for reuse in the broadest sense. The Army's M&S standards provide an essential starting point for all developments. Organizations must also look beyond the Army for opportunities to leverage developments from other Service, joint, and Office of the Secretary of Defense (OSD) programs. To properly apply available resources to achieve the vision, all must carefully balance the unique aspects of their requirements with the potential benefits of reuse.

- **Sharing of information**. Harnessing the power of information technology will be equally as important for the institutional Army as it is for the warfighter. The key to successful integration and leveraging is in knowing what M&S tools exist and how to use these in collaborative environments. All Army organizations must support efforts to collect and share information on M&S activities.

The goal of the Army's investments in M&S is to reduce risk and identify, support, and transition M&S leap-ahead and high-payoff opportunities. M&S provides insight into concepts, requirements, design, and operations that would not be otherwise available. The return to the Army for today's investments in these activities will be realized well before the Army fields the Objective Force.

Munitions Transformation Strategy

As a result of new technologies, munitions are becoming more capable across the full spectrum of operational scenarios. Munitions can no longer be viewed as a commodity, but needs to be seen as an integral part of the Army. From close-in fights to deep strikes, munitions must be responsive, effective and supportable. Additionally from a life-cycle standpoint, they must be producible, trainable and maintainable. The process the Army uses to develop, procure, store, manage, and dispose of munitions, therefore, needs to be modernized.

Technologies exist and are evolving to provide munitions with dramatic increases in range, lethality, accuracy, and reliability. Decreases in size and weight resulting in scalable lethality, target discrimination, and interchangeable components will reduce the number and types of munitions needed. Munitions will be responsive through the full operational depth of the battle area. Fires from line-of-sight (LOS), beyond-line-of-sight (BLOS) and non-line-of-sight (NLOS) will provide both suppressive and precision fires. Additionally, these fires will provide variable effects from destruction to nonlethal (NL) incapacitation. Scalable warheads and smart components will contribute to eliminating fratricide and minimize collateral damage to noncombatants. Embedded training technologies, which can be used both in the field and in synthetic training environments, will reduce reliance on live-fire training of expensive munitions to achieve

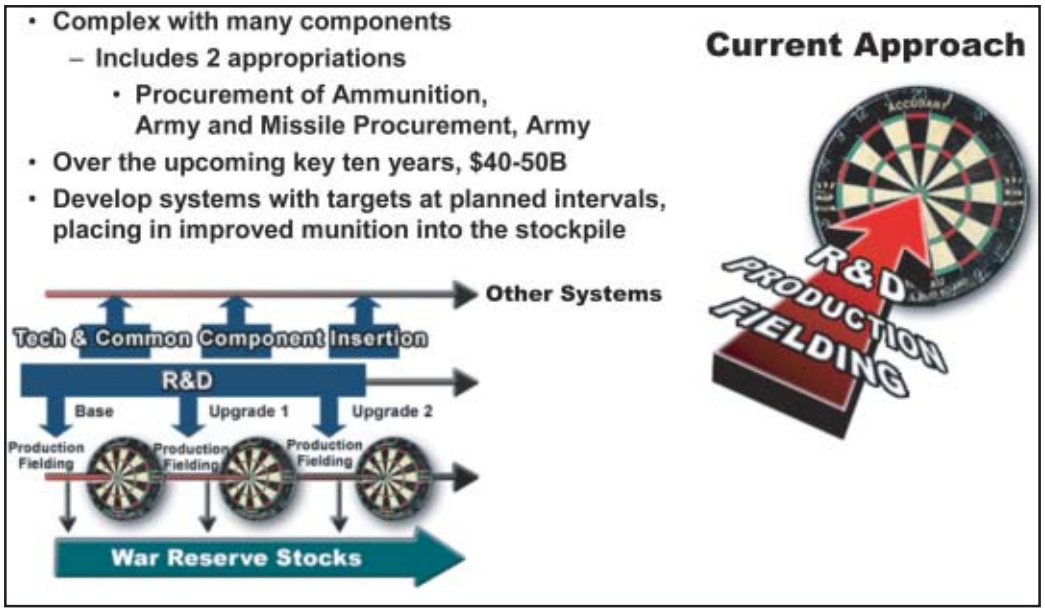

Figure 16. Munitions Transformation

competency. Finally, munitions will be joint, both operationally and logistically. The challenge is to identify critical needs, and not pursue all promises that technology offers.

To truly transform munitions, a synchronized effort incorporating the Army and industry is essential. Common and modular design of components, block upgrades, and recapitalization programs are crucial to the munitions life-cycle strategy. Innovative packaging concepts will decrease the logistical footprint and system wastage. Embedded diagnostics and prognostics will ensure efficient storage and timely delivery, lessening the logistical burden. Design decisions must address training needs as well as second and third order effects on stockpile management and demilitarization. Production facilities will require upgrade and reconfiguration to account for new technologies and to satisfy increasingly stringent environmental and safety standards. Environmentally compliant ammunition and "insensitive munitions" requirements are realities. Demilitarization will become less necessary, as advanced munitions designs and conversions for training reduce this burden on the life cycle.

As with all elements of the Army's Transformation process, limited resources drive decisions and strategies. Munitions to support current readiness must continue to be procured with modest efforts to maintain and upgrade current stocks. Existing stocks must also receive adequate stockpile management and surveillance resources to protect past investments. Munitions production facilities also deserve focused attention to integrate new production technologies and satisfy environmental and safety standards. The competing needs of modernization, readiness, and current operations necessitate a balanced approach to resourcing.

Nonlethal Munitions

The challenges of both current and future operational environments have caused the Army to recognize the need for NL effects. The strategy for the NL effort is integrated at Department of the Army level with other Service efforts as well as the Joint Nonlethal Weapons

Program Integrated Product Team. Specifically, the Army expects that its NL analysis could provide more detailed insights in the following areas:

- Potential delivery means including: LOS (including Soldier-delivered NL), NLOS, and BLOS.
- Battlefield applications: incapacitate, suppress, and disperse combatants and/or separate combatants from noncombatants. Deny vehicle movement or trafficability, either point or area.
- Environmental impacts: alter environmental conditions to favor friendly forces and once use of NL has accomplished its objectives, safely restore the environment to its previous condition.

Overall, NL munitions are a capability integral to all future munitions and applicable to the Objective Force and the FCS. The Army will also seek to incorporate them in legacy and interim munitions as practicable.

Investment Strategy—Purpose and Priorities

The ultimate purpose and goal of Army modernization is to build and maintain multifunctional, combat-capable units using a USF approach. The nature of the planning, programming, and budgeting system requires that combat unit components be managed as single entities. It is the whole unit, however, that remains the primary focus. The objective is to achieve an operational capability that satisfies mission needs. The challenge inherent in building combat-capable units through the application of integrated components and the necessary associated functions is the achievement of synergism and complementary results in the units.

In the Army's investment program for PB04, the overriding requirement is to maintain essential warfighting readiness. This imperative is the foundation of the Army's commitment to the Nation, and it is likewise the essential enabler for being able to transform to a future force that is better able to meet future strategic requirements.

Second to the imperative of maintaining readiness, the Army in PB04 seeks to maintain and improve the well-being of its people. This is not a luxury, but rather is vital to the Army's overarching capabilities and ability to conduct all assigned missions.

Next, as part of its PB04 program, the Army seeks to accelerate Army Transformation and move towards the future force that is the ultimate objective in the Army's Vision. It is within the context of this effort that the Army's Modernization Strategy of Balanced Modernization guides investment decisions and relative priorities. With the greatest emphasis on the achievement of the future Objective Force and fulfilling more immediate shortfalls with the Interim Force, coupled with the indispensable imperative of current readiness, the Army has chosen to continue taking risk in the modernization of its Legacy Force and the associated midterm warfighting readiness. This risk takes the form of more selective modernization and recapitalization efforts for the Legacy Force, though still retaining sufficient efforts to ensure essential readiness requirements.

Another area of priority for the Army in PB04 relates to programs supporting anti-terrorism and force protection. Increased requirements following the September 2001 attacks have necessitated program adjustments, though for many of these the Army will seek additional assistance in order to fully support the additional requirements.

The Objective Force

The Objective Force is the Army's main effort and ultimate Transformation goal. It is the future force that will achieve the characteristics described in the Army vision—responsiveness, agility, deployability, versatility, lethality, survivability, and sustainability—and will be capable of dominating at every point on the spectrum of operations. The Objective Force will be equipped with significantly enhanced systems centered on the FCS, the networked system of systems made up of a family of manned and unmanned air and ground platforms, and ground-based maneuver, maneuver support and maneuver sustainment systems. The force will be designed to operate as part of a joint team, and its joint operational architecture will provide an enhanced C4ISR capability for dominant situational awareness and precision strike. Key enabling systems such as the Comanche helicopter, the Warfighter Information Network-Tactical (WIN-T), the Joint Tactical Radio System (JTRS), the FCS-Cannon, the Aerial Common Sensor (ACS), and FCS will complement the overall capabilities that the Objective Force will bring to the Joint Force of the future.

S&T Priorities

The near-term priority is on maturing and demonstrating critical technologies for the Objective Force, with major emphasis on the FCS. These technologies will provide the foundation for accelerated acquisition programs to meet the timetable of the Army Vision. Key areas of investment include lethality, survivability, C4ISR, Soldier system-of-systems, semiautonomous air and ground robotic vehicles, human engineering, reduced logistical burden, Soldier training, and medical prevention and casualty care. Advanced technology development (6.3) provides mature technologies for rapid insertion into Army acquisition programs, whether they are new systems or product improvements.

The midterm focus is on developing and demonstrating incremental upgrades for the FCS and new capabilities for the Objective Force. Investments that will provide transition products in the midterm are currently being made in applied research (6.2) programs, in areas such as lethality, survivability, C2 on-the-move, advanced simulation, personnel technologies, and logistics demand reduction; this research includes the development of components, models, and new concepts through in-house and industry efforts.

In the far term, revolutionary new warfighting concepts will be enabled by increased Army investments in basic research (6.1). Basic research is the number two priority area for S&T investment. The products of current investments in areas such as nanoscience, biometrics, smart structures, advanced computing, and materials by design will enable significant enhancements that maintain technological overmatch in our land combat forces.

S&T Efforts

Army S&T is responding boldly to the challenges of the Army Vision. The S&T program consists of 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 mid term, and seeks the imaginable for an uncertain far-term future.

FCS is the main thrust of the S&T program and represents 29 percent of all S&T investments. The balance of S&T is targeted to pursuing

technologies that support the Objective Force as a whole. These technologies are described below:

- **Future Combat Systems**: The keystone S&T initiative enabling the Objective Force is the FCS program. The FCS is comprised of a family of advanced, networked air- and ground-based maneuver, maneuver support, and sustainment systems that will include manned and unmanned platforms. The FCS is networked via a C4ISR architecture, including networked communications, sensors, battle command systems, training and both manned and unmanned reconnaissance and surveillance capabilities that will enable improved situational understanding and operations at a level of synchronization heretofore unavailable. The FCS will network systems under development, and new systems to be developed to meet the needs of the U A. The network will enable improved ISR, enhanced analytical tools, joint exchange of blue and red force tracking down to the tactical level, battle command, real-time sensor-shooter linkages, and increased synergy between echelons and within small tactical units. It will also enable the UA to connect to higher echelons—Army and joint—and national assets making these capabilities available to the small units of the UA. The Army will be adhering to the following seven key performance parameters during the developmental process of the FCS: joint interoperability, networked battle command, networked lethality, transportability, sustainability/ reliability, training, and survivability. Representative enabling technologies include unmanned air and ground technologies; highly mobile lightweight ground vehicles with advanced survivability

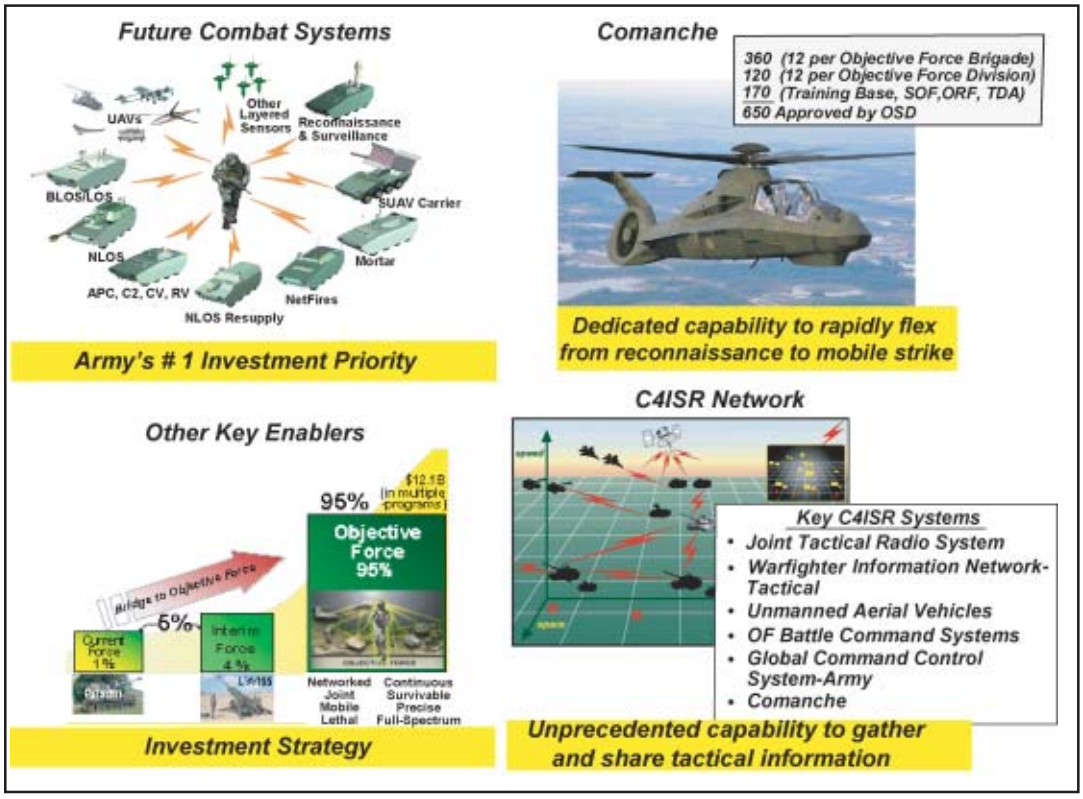

Figure 17. Objective Force Systems

systems (e.g., active protection, lightweight armor, signature management, and countermine capability); hybrid-electric drive; low-power demand electronics and efficient power management; advanced lethality systems; and reliable, secure communications systems.

- **Objective Force Warrior (OFW)**: The flagship Soldier S&T program provides the UA's dismounted Soldier with the same combat overmatch that FCS brings to the maneuver portion of the Objective Force. The program is a phased effort to achieve leap-ahead advances in the areas of Soldier survivability, lethality, and agility to operate for extended periods under arduous conditions, with minimal loss in physical capabilities from fatigue, stress, and hardship. The initial phase, the OFW Advanced Technology Demonstration, develops an integrated system-of-systems for the dismounted Soldier with FCS connectivity. OFW will employ open system architectures and high-risk/high payoff technologies to yield an ultra-lightweight, stealthy combat suit and an integrated, network-centric communications/sensor/power suite that enables dismounted Soldiers to network and mass fires and generally access the power of the Objective Force. It is thru OFW that mounted/dismounted synchronization will occur. OFW will also allow the dismounted Soldier to greatly reduce his backpack by transloading functions to the platform. OFW funding has been increased to provide greater system maturity in support of transition to the Land Warrior-Advanced Capability System Development and Demonstration (SDD). OFW Phase II efforts will develop and integrate emerging high-payoff technologies such as micro-turbines and nano-materials to further enhance Soldier capabilities.

- **C4ISR:** Research and technology to enable comprehensive situational awareness for the Objective Force. This includes advanced ground, air, and space-based sensors and sensor processing, flexible size/shape display interface surfaces, disposable (cost effective) miniature sensor networks, electronic warfare systems and techniques, militarized and special-purpose electronics, countermine technologies and C4 system technologies. Keys to this are on-the-move distributed C2, multifunction sensors and sensor fusion algorithms, and development of a seamless tactical Internet within and between units. Objective Force systems such as ACS integrate these technologies into fused multidiscipline intelligence (multi-INT), globally self-deployable, full-spectrum, precision-targeting capabilities providing critical near-real-time intelligence to the Objective Force commander.

- **Basic Research**: Investments in the exploration of fundamental phenomena that have significant potential to enhance future land warfare capabilities in areas such as armor materials by design, nanoscience, biometrics, compact power, smart structures, miniature and multifunctional sensors and Soldier performance.

- **Medical**: Research and technology to protect and treat warfighters to ensure worldwide deployability (e.g., emergency room technology in a box) increase warfighter availability, and reduce casualties and loss of life by (1) developing and enhancing the biomedically protected Soldier, thereby increasing the Soldier's ability to operate effectively in the face of infectious, environmental, and chemical/biological threats; (2) enhancing Soldier stamina, enabling Soldiers to conduct sustained, high tempo Objective Force

operations with minimal degradation; and (3) developing combat casualty care materiel for delayed evacuation, to provide optimal battlefield care to the injured.

- **Lethality**: Technologies to enhance the light forces, such as the Line-of-Sight Antitank (LOSAT) System and the Precision Guided Mortar Munitions (PGMM); and technologies to provide lethality options for the Objective Force, such as the compact kinetic energy missile (CKEM), electromagnetic gun and tactical high-energy laser.

- **Rotorcraft**: Research and technology to enhance the performance and effectiveness of future rotorcraft, including autonomous flight and airborne launch systems, small rotorcraft, networked avionics and weapons, and human-systems integration (e.g., crew station) technologies. UAVs such as the Unmanned Combat Armed Rotorcraft (UCAR), Micro-Air Vehicle (MAV) and Organic Air Vehicle (OAV) will provide the warfighter enhanced situation awareness, force survivability and lethality by enabling air-to-air and air-to-ground teaming.

- **Logistics Reduction**: Technologies to enhance deployability and reduce logistics demand, especially the demand on strategic lift. Examples include near real time asset visibility providing the logistician a Common Relevant Operating Picture (CROP), high altitude capable, precision-guided airdrop distribution system; embedded water generation systems; compressed meals, currently an S&T effort, envisioned for use with the FCS; tri-generation equipment (power, heat, and environmental control unit (ECU)) that provide protection from the elements for our Soldiers and equipment; unmanned vertical takeoff and landing (VTOL) cargo lifter demonstrator; embedded diagnostic/prognostic systems; and robotics to support resupply and reduce demand for food, fuel, and water.

- **Personnel Technologies**: Advanced training tools and methods to enhance warfighter and commander abilities and performance, advanced human engineering concepts to avoid information overload and optimize task allocation to enhance warfighting effectiveness.

- **Survivability**: Technologies that enable organizations, platforms, and Soldiers to avoid being detected, acquired, hit, penetrated or killed. Examples include active-protection systems, lightweight armor, vehicle-mounted mine detection, and signature management.

- **Advanced Simulation**: Simulation tools to provide increasingly realistic environments and systems support acquisition, requirements, and training. This includes technologies for networked simulations, embedded training, constructive simulations, virtual environments, and range systems for live use.

Future Combat Systems

The requirement for the FCS is driven by the evolving operating environment and capabilities-based threats, combined with the need for a full-spectrum dominant force as identified in DoD guidance as well as in Joint and Army Visions for a future transformed force. The FCS will serve as a core building block within all maneuver UA echelons to develop superior combat power, sustainability, agility, and versatility. Furthermore, its mission need has application throughout the range of conflict

from peacekeeping missions to major combat operations.

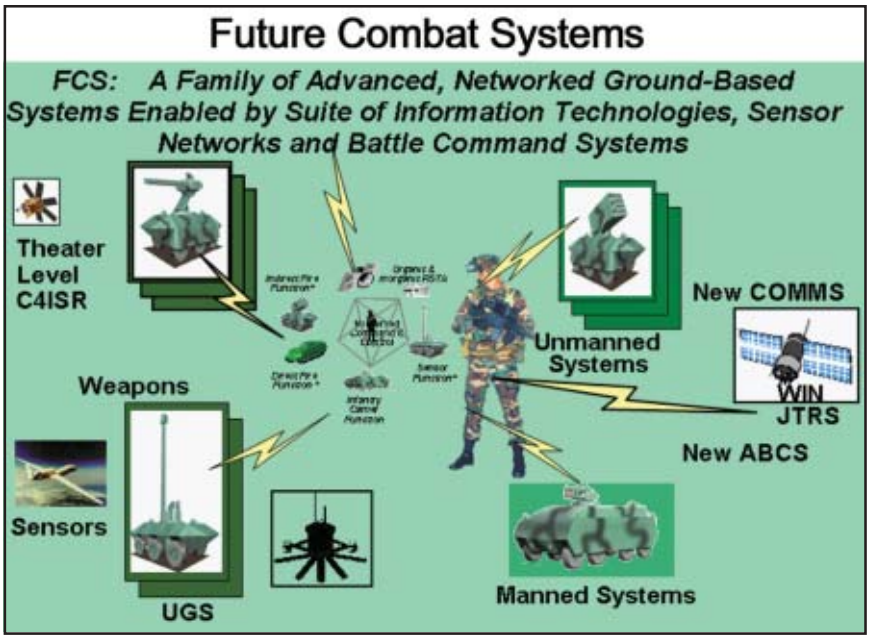

Figure 18. Future Combat Systems

The FCS leverages advanced technologies with the capability to incorporate future advances through technology insertion as technologies become available or through major block improvements. Versatility will be realized through emphasis on an open architecture system concept, with an easily upgradeable and tailorable design approach to enable the system of systems to engage in different missions as needed. The program uses key promising technologies and techniques in areas such as survivability, lethal and nonlethal effects, supportability, propulsion, mobility, structures, robotics, human factors, training, and modeling and simulation. Such technologies combined with innovative concepts of operations and an open systems architecture approach support the fielding of FCS-equipped combat formations this decade and into the future.

The FCS provides a secure C4ISR system to harness advances in the distribution and effective use of information power. The FCS provides survivability through an integrated systems approach consisting of passive and active threat sensors, electronic warfare countermeasures, chemical/kinetic energy, active protection, advanced armors, and commander's decision aid. It also provides lethal direct fire, indirect fire, air defense, complementary nonlethal fires and effects, and troop transport capabilities. The FCS will consist of a combination of manned and unmanned air and ground elements.

Development of the FCS began in early 2000 when the Army partnered with Defense Advanced Research Projects Agency (DARPA) and established an aggressive, collaborative demonstration program. In September 2001 the Army assigned total program management authority to the Program Executive Officer, Ground Combat Systems. TRADOC completed work on the Mission Needs Statement (MNS) and Statement of Required Capabilities (SORC) in October 2001. In March 2002, the Army selected Boeing and SAIC as the FCS Lead Systems Integrator (LSI) to take the program through Concept Technology Development (CTD) and possibly into the System Design and Development (SDD) phase. In 2002, further doctrinal and materiel development also progressed with the publication of the Operational and Organization (O&O) concept for a Unit of Action—the brigade-sized element associated with the FCS. An AOA has been underway since May 2002 to examine the prospective performance of FCS-equipped units compared to existing structures. In August 2002, the Army Staff received the Operational Requirements (ORD) document from

TRADOC and began a series of studies that focus on the technologies that are likely to be applied to the FCS development. All of these efforts will culminate with a projected comprehensive assessment and FCS Milestone B decision in spring 2003 to confirm the feasibility of technology and initiate implementation of a coherent and integrated strategy to move toward the systems procurement and initial equipping of the first UA beginning in FY08.

Networked Fires

Today's forces are challenged to routinely synchronize fires so that they enable combined arms maneuver at tactical levels. The need to fully integrate and synchronize fires with maneuver will be even more critical for Objective Force operations. The "fires" application of the Objective Force battle command system provides near-real-time integration of lethal and nonlethal effects in the land domain to include "reach" to joint sensors and fires and effects capabilities. Networked Fires is the triad of relevant sensors, effects capabilities and battle command that enables dynamic, on-demand fires and effects to achieve the commander's tactical and operational objectives. It operates within the larger battle command system to develop integrated strike solutions while applying the supported commander's intent as the "decider." It fully leverages all relevant Army, joint, national and multinational sensors to locate and strike targets with a wider set of lethal and nonlethal effects exploiting the capabilities of the entire force. Networked Fires is fully integrated from theater to platform allowing it to establish, alter and terminate linkages to all relevant sensors and effects generating systems. This is routinely done in near real time by providing streaming target data from sensors to shooters at all echelons without intervention. Furthermore, Networked Fires is fully tailorable allowing commanders to specify the amount of autonomy exercised by the system. Networked Fires provides responsive integrated, scalable, precision, area and special fires and effects to all echelons.

Precision munitions and better nonlethal capabilities, coupled with advances in range, communications, ISR, and improved capabilities for routine employment of non-organic and joint service assets collectively provide the capability to orient on effects rather than delivery systems or support relationships. Networked Fires will leverage these capabilities allowing us to disrupt, dislocate,

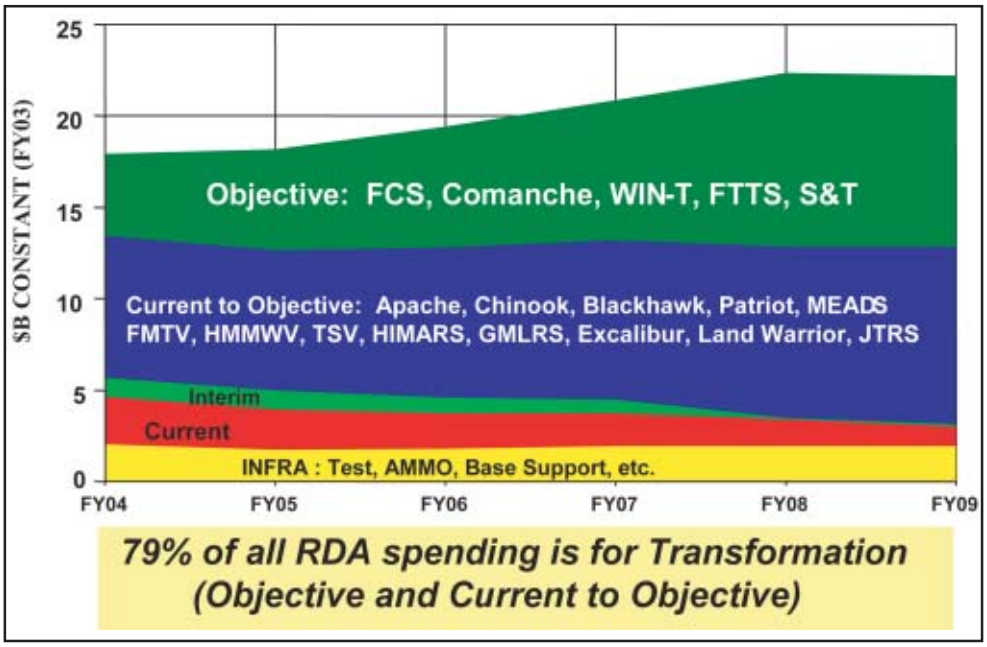

Figure 19. RDA

disorganize, disintegrate, fix, isolate, suppress and destroy decisive points and centers of gravity of an adaptive enemy in support of combined arms maneuver. Thus, the Objective Forces will leverage information technologies to achieve greater synergy of fires and maneuver while remaining inextricably linked to the commander's intent and focused on mission accomplishment.

PB04 Implementation

To accelerate the pace of Transformation to achieve the Army's ultimate objective—the Objective Force—the Army has increased its critical S&T funding to a total of $10.76 billion over the FYDP, with almost 98 percent of it targeted specifically for the Objective Force. This represents an increase of $1.09 billion compared to last year's levels. This will adequately fund all of the Army's critical S&T requirements to begin the fielding of the first Objective Force unit by 2008. In addition to its own S&T funding, the Army has entered into a cost-sharing Memorandum of Agreement with DARPA to develop key FCS technologies. Army S&T efforts will continue to feed block improvement to the initial Objective Force capabilities and will leverage industry and universities to maximize its return on S&T investment dollars.

The first major milestone on the path to fielding the Objective Force capabilities is the FCS Milestone B decision planned for FY03. The Army leadership will review the status of technologies currently under development for the FCS and determine their maturity to enter SDD. Based upon that review and determination, the Army will make an appropriate recommendation to OSD. The Army maintains its goal of beginning low-rate initial production of the FCS in FY06, having first unit equipped (FUE) in FY08, and attaining an initial operational capability (IOC) in FY10 for the first UA.

As previously mentioned, the Army selected Boeing and SAIC as the LSI for the FCS in March 2002 and is presently working on the development of costing for its development, procurement and associated costs. At this point, the Army has developed an initial estimated cost position and funding strategy for this program of $22.6 billion, though this level will be adjusted for future budget planning once the design concept is complete.

The Interim Force

The Interim Force will fill an existing strategic and operational capability gap and will combine some of the best characteristics of the current heavy, light and SOF forces. Organized into SBCTs, this force will provide regional Combatant Commanders with a rapidly deployable, tactically superior force to meet operational requirements of the joint team. These units will be infantry-centric and equipped with the latest in C4ISR capabilities to enhance their joint synergy and versatility.

Equipping—Stryker Brigade Combat Teams

The Army will maximize use of the USF concept to equip the SBCTs. Unit sets will be determined through extensive coordination between the major command of the SBCT, the Army's Training and Doctrine Command, and the Office of the G8, Headquarters, Department of the Army. Each unit will be sequenced through a synchronized 18-month window, which not only involves the equipping of the unit, but also New Equipment Training (NET) for individual Soldiers and unit collective training culminating in the achievement of operational readiness.

Figure 20. Stryker

PB04 Implementation

The Army has allocated over $4.1 billion through FY09 to field six SBCTs. Two combat brigades are in the process of converting to SBCTs with the fielding of the SAVs. One of the six SBCTs will be deployed to Europe by 2007. The above figure relates to Stryker procurement costs alone, and the Army has also allocated sufficient resources throughout its program to fund necessary support equipment, training enablers, sustainment enablers, and infrastructure costs. Further refinements in both cost and funding of all SBCT requirements will continue in order to ensure that the Stryker Brigades fully support the Combatant Commanders. In that regard, the Army will provide a plan to the Deputy Secretary of Defense in July 2003, which will address the costs of building the final two SBCTs to the desired standard as well as upgrading the first three SBCTs to provide the optimum capability. The plan will also include a review of basing options.

The Legacy Force

Today's Army—our Legacy Force—guarantees both current warfighting readiness and the ability to transform successfully to the future Objective Force. This necessity will remain as the Army begins fielding Objective Force units in 2008 and transfers readiness responsibility to these new UAs and UEs. To preserve adequate operational readiness during this period, the Army must continue to invest sufficiently in its current force through a program of selective recapitalization and limited modernization. These streamlined investments are essential to ensure the Army retains military superiority during Transformation. Likewise, they help reduce the operating and support costs associated with aging weapon systems.

Equipping Initiatives

Recapitalization

Recapitalization is the rebuild and selected upgrade of currently fielded systems to ensure

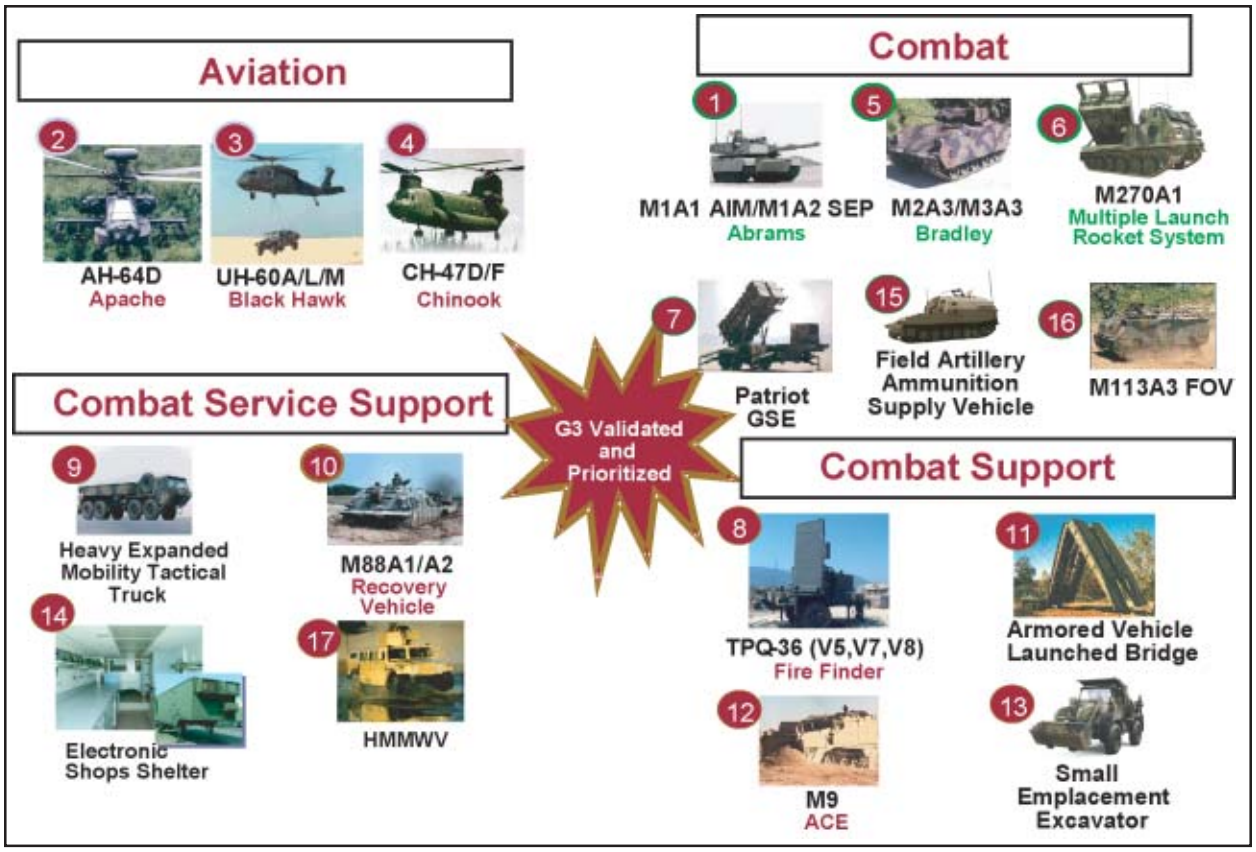

Figure 21. Recap Systems

operational readiness and a near zero-time/ zero-mile system. The goals of recapitalization are to improve unit effectiveness and warfighting capability; extend service life; reduce operating and support cost; and improve reliability, safety, and maintainability. When operationally necessary and financially prudent, the Army will recapitalize selected systems.

The Army's requirement to recapitalize all of its systems is significant, and the requirement is clearly unaffordable given the current fiscal constraints and planning guidance. The Army, therefore, has decided to focus its resources on only those systems and units that are absolutely essential to maintaining today's warfighting readiness while taking risk with other systems and other parts of the force. To develop an affordable and executable recapitalization program, the Army has prioritized 17 of its systems. The Army's Prioritized Recapitalization Program, in addition to selecting only 17 systems, also primarily focuses its resources on selected units within the Counterattack Corps, taking risk in the Army's remaining units.

For the Legacy Force, the focus is on the recapitalization of selected aviation and ground equipment. The Army has reduced the Legacy-only recapitalization program by over $6 billion, with a large portion of the reduction coming from the Abrams and Bradley programs, which were reduced by $4 billion. This was accomplished primarily by reducing the recapitalization program from 3 1/3 divisions to two divisions. As a result, the RC receives virtually no modernization. The Apache recapitalization program, however, remains funded. Additional recapitalization efforts include the Heavy Expanded Mobility Tactical

Truck (HEMTT) and Heavy Tactical Vehicle Systems.

While the recapitalization program approval process has helped the Army focus its resources, reduce requirements, and develop cost effective, funded programs, the Army must still remain aware of the inherent risk in this program. Even for these 17 systems, the Army still has significant unfunded requirements for systems that reside in other units beside the Counterattack Corps. As a result of its recapitalization strategy, the Army has provided critical combat capability to portions of the Counterattack Corps, accepted risk in its remaining units, and established a process that will help free up resources for the Interim and Objective Forces. The Army will continue to review the scope of its recapitalization efforts and make adjustments as appropriate.

Limited Modernization

The Army focuses its limited modernization efforts for the Legacy Force primarily on those systems that will benefit the warfighter today, but will also have direct applicability to the future Objective Force over the longer term. These systems are classified into two categories: those that are part of the near-term Legacy Force and will transition to the Objective Force over time (e.g., the Family of Medium Tactical Vehicles (FMTV)) and those that are being built specifically for the Objective Force, but which can be used today (e.g., Tactical Unmanned Aerial Vehicles (TUAV) and Highly Mobile Artillery System (HIMARS). By doing this, the Army is ensuring that its scarce resources are efficiently spent on systems that benefit it today as well as in the future.

The Army has continued its efforts to accept greater risk in the current force in order to accelerate Transformation to the Objective Force. To accomplish this, modernization efforts have been significantly restricted to selected units and capabilities. Only two divisions in III Corps, some XVIII Airborne Corps units, the SBCTs, and a limited number of other units, including SOF units, will receive upgrades and enhanced capabilities. RC units are receiving virtually no modernization as a result of this curtailment.

PB04 Implementation

The Army is accepting more risk in its current Legacy Force in order to fund Army Transformation efforts. Over the past three budget planning periods, the Army has terminated 29 programs resulting in $8.2 billion in savings that were reinvested in Army Transformation and restructured others for an additional savings of $4.8 billion. The FY04-09 Plan accelerates this trend by decreasing funding for the Legacy Force by another $22.5 billion, of which $13.5 billion was reallocated to the FCS. Overall, funding was increased for programs that are transformational and which support the Defense Transformation goals, sustained for high-priority systems that will transition to the Objective Force, and reduced for systems that are not essential to Transformation. The net result of this review was that the Army terminated 24 systems ($13.9 billion) and restructured an additional 24 ($8.6 billion) in order to fund Transformation and other high-priority programs that will remain as part of the future Objective Force.

The majority of the Army's funding for the Legacy Force (70 percent) is devoted to systems that will remain as part of the future force and can also be of direct benefit to the Combatant Commander in the near-term and midterm.

Summary and Conclusion

Today's Army is fully committed to maintaining and accelerating the pace of change that commenced in 1999 with the advent of a new vision for a transformed future force. Army Transformation is now an integral part of day-to-day planning and operations, and solid momentum on a path of revolutionary change has been firmly established as a result of tough choices by the Army leadership and dedicated commitment on the part of Soldiers and civilians in all Army components. Transformation is already yielding new capabilities that will contribute to the Joint Force in the ongoing war on terrorism, and the results of Transformation in the future will provide an even more responsive, relevant, and preeminent land force that can be integrated with other Services and coalition partners in a wide array of missions against any potential adversary.

The *2003 Army Modernization Plan* reviews the Army's strategy of building and fielding combat-capable units that will maintain adequate current warfighting readiness while providing significant new capabilities in the future. Accelerated efforts are underway for capturing the opportunities provided by revolutionary new technologies and incorporating these capabilities in new systems and units. In the meantime, visible results are already being seen in the new SBCTs that are becoming operational beginning in 2003 and which will serve as an important link to future Objective Force UAs to be fielded by the end of this decade. The *Army Modernization Plan* identifies the requirements and the plans for fielding these important new capabilities.

The *Army Modernization Plan* also focuses modernization efforts through the three paths or vectors of Transformation, and it describes the overall Modernization Strategy as well as the key processes that will facilitate the building of combat-capable units. While the materiel aspects of modernizing and transforming the Army are a central theme of the *Army Modernization Plan*, it is essential that modernization be fully coordinated, balanced, and synchronized across the critical requirements of doctrine, training, leader development, organizations, facilities, and Soldiers. Respective annexes are devoted to a specific discussion of these essential areas as well as to the important topic of homeland security. Above all else, people remain central to the success of Transformation, and Soldiers are the true credentials of the Army—today and tomorrow—just as they have been for the past 227 years of our Nation's history.

While the Army, with the active support of Congress and OSD, has made significant progress to date initiating Transformation, the most recent budget planning process has involved additional measures by the Army to identify the needed resources to sustain this path of change. More hard choices had to be made as part of the overall balancing of future readiness with acceptable risks in the current force. The need for careful balance has been further complicated by the additional impetus of new requirements in the war against terrorism and for homeland security, both of which must remain high priorities.

The *Army Modernization Plan* is submitted in conjunction with the release to Congress of PB04, which continues to implement and fund Army Transformation.

Specifically, the Army's portion of the PB04 submission provides funding for the following:

- Continues commitment to accelerating Transformation by increasing funding for the Objective Force by almost $14.9 billion over the FYDP.
- Funds $10.76 billion in S&T over the FYDP, a $1.09 billion increase from previous year.
- Fully funds fielding of six SBCTs by 2008, to include an SBCT to Europe by 2007.
- Funds a total of $22.7 billion over the FYDP for RDTE and procurement to continue the Army's efforts to begin fielding the FCS by 2008.
- Fully funds Comanche requirements over the FYDP.
- Funds $1.1 billion to modernize SOF Aviation.
- Increases funding by over 37 percent for programs specifically aimed at implementing the six Defense Transformation Goals.

Shortfalls for support of Transformation continue to exist in PB04, specifically in the following areas for implementation of Army plans through FY09:

- Does not adequately fund the limited modernization and recapitalization of the Legacy Force.
- Increases the risk to the Legacy Force by terminating/restructuring 48 systems for a total savings of $22.5 billion in order to fund Transformation and other high-priority programs.

The Army has continued to make difficult decisions to maintain its commitment to accelerating Transformation. While the Army has invested sufficient resources to maintain its essential warfighting readiness and a decisive-win capability, it has likewise assumed greater risk in the near term to achieve enhanced capabilities and readiness in the future. The Army will continue to assess this risk in the future as it balances the demands of the security requirements today with the evolving demands and opportunities of the future. Modifications in specific plans can and will be made as necessary to ensure that the proper balance is preserved throughout this process.

Measurable progress has been achieved thus far on the revolutionary path of Army Transformation, and even more dramatic improvements lay ahead. The Army has made the tough choices required to establish irreversible momentum for continued progress and is fully committed to a long-term process of change on behalf of its unqualified support to the security of the United States.