

MILITARY TRANSFORMATION

A STRATEGIC APPROACH



Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE MAR 2002		2. REPORT TYPE N/A		3. DATES COVERED -	
4. TITLE AND SUBTITLE Military Transformation A Strategic Approach				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Office of Force Transformation Office of the Secretary of Defense Department of Defense Washington, DC				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release, distribution unlimited					
13. SUPPLEMENTARY NOTES The original document contains color images.					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT SAR	18. NUMBER OF PAGES 40	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			



Message from the Director, Office of Force Transformation

Our country is being called on to accomplish three difficult missions at once. First, we must win the global war on terrorism. Second, we have to prepare for the wars we may have to fight later in this decade by making a number of long-delayed investments in procurement, people, and modernization. Third, we have to be prepared for the wars of the future. Therefore, we must transform the U.S. Armed Forces so that they can deter and defend against the emerging threats of the 21st century.

Each of these three missions is critical; none can be put off. We cannot delay transformation while we fight the war on terrorism. As we painfully learned on September 11th, 2001, our adversaries are already transforming. They are watching us; they are studying how we were successfully attacked, how we responded, and the ways in which we may be vulnerable in the future. We stand still at our peril. If we do not identify our vulnerabilities, fix what is broken, and establish processes to enable innovation and adaptability—if we do not transform—our enemies will surely find new ways to attack us. In sum, transformation is not a goal for tomorrow; it is a fundamentally important endeavor that we must embrace in earnest today.

Transformation lies at the heart of our new approach to defense. The development of transformational capabilities, processes, and forces will be given strategic focus by the principal challenges and opportunities under our defense strategy. The Department has distilled these into six operational goals as outlined in the Quadrennial Defense Review and addressed in this military transformation strategy. These six goals represent the operational focus for our efforts to transform the U.S. Armed Forces. The Department seeks to ensure that changes occur not only in the operating concepts we develop and the systems we acquire but also in our military culture and the processes that drive investment decisions.

As demonstrated by the superb performance of U.S. forces during recent combat operations, we are on course to transform our military into an agile, network-centric, knowledge-based force capable of conducting effective joint and combined military operations against all potential future adversaries. Over the long term, our security and the prospects for peace and stability for much of the rest of the world depend on the success of our transformation.

A handwritten signature in blue ink, reading "A. K. Cebrowski", is located at the bottom center of the page.

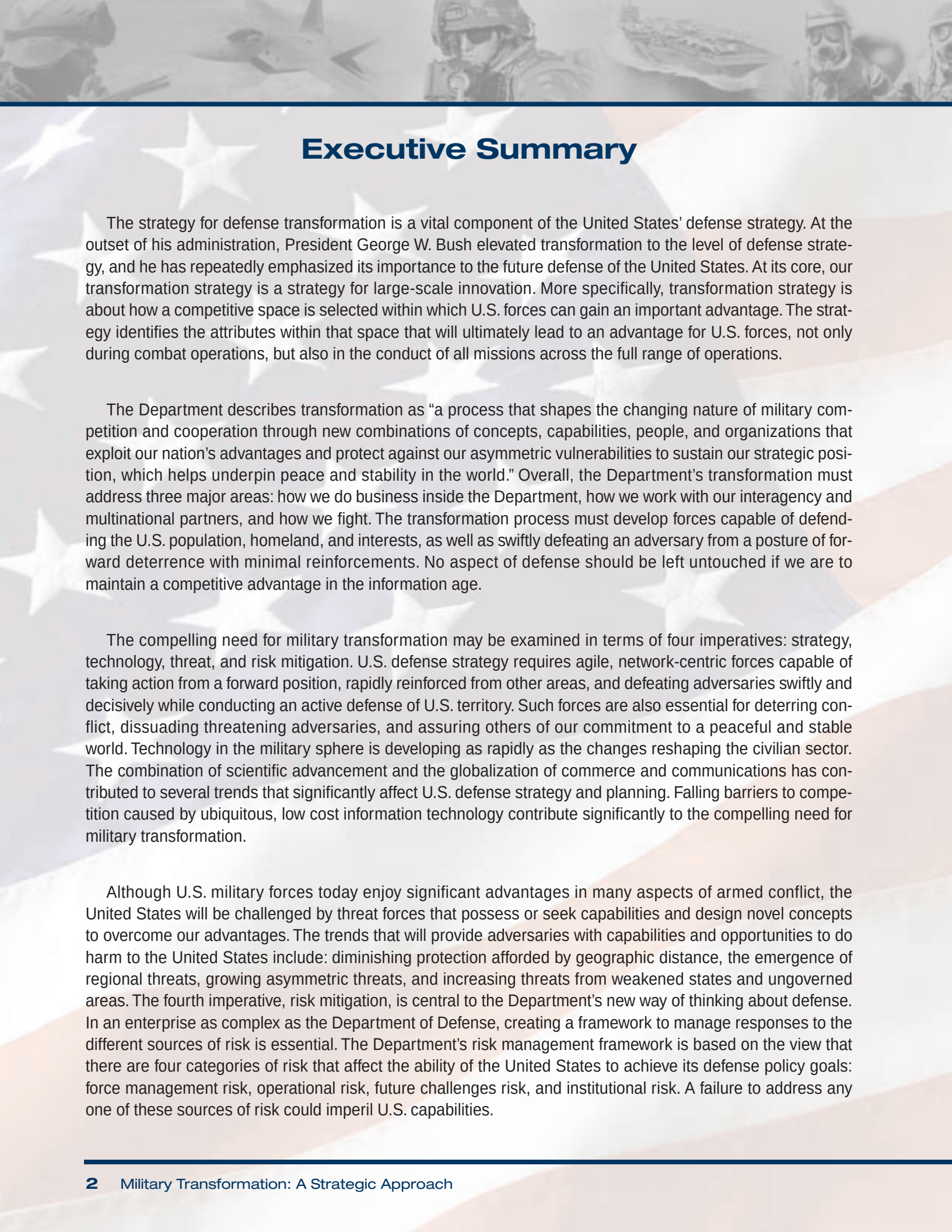
A. K. Cebrowski
Director, Office of Force Transformation
Office of the Secretary of Defense

“The need for military transformation was clear before the conflict in Afghanistan, and before September the 11th. . . . What’s different today is our sense of urgency – the need to build this future force while fighting a present war. It’s like overhauling an engine while you’re going at 80 miles an hour. Yet we have no other choice.”

*President George W. Bush
at The Citadel, Charleston, SC,
December 11, 2001*

CONTENTS

Executive Summary	2
Introduction	4
U.S. Defense Strategy	4
Purpose of Military Transformation Strategy	7
What Is Transformation?	8
Scope of Transformation	9
Military Transformation Process	10
Compelling Need for Military Transformation	12
Changed Security Environment	12
Military Transformation – A Strategic Imperative	12
Military Transformation – A Technological Imperative	14
Military Transformation – A Threat Imperative	15
Military Transformation – A Risk Mitigation Imperative	16
Six Critical Operational Goals	17
Protecting Critical Bases and Defeating Chemical, Biological, Radiological, and Nuclear Weapons	17
Projecting and Sustaining Forces in Anti-Access Environments	18
Denying Enemy Sanctuary	18
Leveraging Information Technology	18
Assuring Information Systems and Conducting Information Operations	19
Enhancing Space Capabilities	19
Four Pillars of Military Transformation	20
Essential Elements of the Military Transformation Strategy	20
Pillar One: Strengthening Joint Operations	21
Pillar Two: Exploiting U.S. Intelligence Advantages	23
Pillar Three: Concept Development and Experimentation	25
Pillar Four: Developing Transformational Capabilities	26
The Emerging Way of War	28
Military Transformation and the Strategic Environment	28
Deter Forward – A Concept for Prevention	29
Governing Principles of a Network-Centric Force	31
Network-Centric Operations and the Domains of Conflict	32
Effects-Based Operations	34
Conclusion	34



Executive Summary

The strategy for defense transformation is a vital component of the United States' defense strategy. At the outset of his administration, President George W. Bush elevated transformation to the level of defense strategy, and he has repeatedly emphasized its importance to the future defense of the United States. At its core, our transformation strategy is a strategy for large-scale innovation. More specifically, transformation strategy is about how a competitive space is selected within which U.S. forces can gain an important advantage. The strategy identifies the attributes within that space that will ultimately lead to an advantage for U.S. forces, not only during combat operations, but also in the conduct of all missions across the full range of operations.

The Department describes transformation as “a process that shapes the changing nature of military competition and cooperation through new combinations of concepts, capabilities, people, and organizations that exploit our nation's advantages and protect against our asymmetric vulnerabilities to sustain our strategic position, which helps underpin peace and stability in the world.” Overall, the Department's transformation must address three major areas: how we do business inside the Department, how we work with our interagency and multinational partners, and how we fight. The transformation process must develop forces capable of defending the U.S. population, homeland, and interests, as well as swiftly defeating an adversary from a posture of forward deterrence with minimal reinforcements. No aspect of defense should be left untouched if we are to maintain a competitive advantage in the information age.

The compelling need for military transformation may be examined in terms of four imperatives: strategy, technology, threat, and risk mitigation. U.S. defense strategy requires agile, network-centric forces capable of taking action from a forward position, rapidly reinforced from other areas, and defeating adversaries swiftly and decisively while conducting an active defense of U.S. territory. Such forces are also essential for deterring conflict, dissuading threatening adversaries, and assuring others of our commitment to a peaceful and stable world. Technology in the military sphere is developing as rapidly as the changes reshaping the civilian sector. The combination of scientific advancement and the globalization of commerce and communications has contributed to several trends that significantly affect U.S. defense strategy and planning. Falling barriers to competition caused by ubiquitous, low cost information technology contribute significantly to the compelling need for military transformation.

Although U.S. military forces today enjoy significant advantages in many aspects of armed conflict, the United States will be challenged by threat forces that possess or seek capabilities and design novel concepts to overcome our advantages. The trends that will provide adversaries with capabilities and opportunities to do harm to the United States include: diminishing protection afforded by geographic distance, the emergence of regional threats, growing asymmetric threats, and increasing threats from weakened states and ungoverned areas. The fourth imperative, risk mitigation, is central to the Department's new way of thinking about defense. In an enterprise as complex as the Department of Defense, creating a framework to manage responses to the different sources of risk is essential. The Department's risk management framework is based on the view that there are four categories of risk that affect the ability of the United States to achieve its defense policy goals: force management risk, operational risk, future challenges risk, and institutional risk. A failure to address any one of these sources of risk could imperil U.S. capabilities.



The Department's military transformation efforts must be focused on emerging strategic and operational challenges and the opportunities created by these challenges. Six critical operational goals identified by Secretary of Defense Donald H. Rumsfeld provide the focus for the Department's transformation efforts: (1) Protecting critical bases and defeating chemical, biological, radiological, and nuclear weapons; (2) Projecting and sustaining forces in anti-access environments; (3) Denying enemy sanctuary; (4) Leveraging information technology; (5) Assuring information systems and conducting information operations; and (6) Enhancing space capabilities. Over time, the continued focus of the Department's force transformation efforts on the development of the capabilities necessary to achieve these six critical operational goals will help shift the balance of U.S. forces and broaden our capabilities. First and foremost, the Department will seek to deter and, if necessary, defeat the full range of threats forward. Attaining these six goals will help us do that in a rapidly changing world.

The four military transformation pillars identified by the Secretary—strengthening joint operations, exploiting U.S. intelligence advantages, concept development and experimentation, and developing transformational capabilities—constitute the essential elements of the Department's force transformation strategy. The first pillar focuses on strengthening joint operations through the development of joint concepts and architectures and the pursuit of other important jointness initiatives and interoperability goals. The overarching *Joint Operations Concepts (JOpsC)* document provides the operational context for military transformation by linking strategic guidance with the integrated application of Joint Force capabilities. The second pillar involves exploiting U.S. intelligence advantages through multiple intelligence collection assets, global surveillance and reconnaissance, and enhanced exploitation and dissemination. Our ability to defend America in the new security environment requires unprecedented intelligence capabilities to anticipate where, when, and how adversaries intend to harm us.

The third pillar, concept development and experimentation, involves experimentation with new approaches to warfare, operational concepts and capabilities, and organizational constructs through war gaming, simulations, and field exercises focused on emerging challenges and opportunities. Experiments designed to evaluate new concepts provide results that help refine those concepts in an iterative fashion. The Department requires strong mechanisms for implementing results from concept development and experimentation and, more immediately, for developing transformational capabilities needed to support the JOpsC and subordinate Joint Operating Concepts.

Although the transformation of the U.S. Armed Forces is a continuing process, the recent performance of U.S. forces in the successful conduct of Operations Enduring Freedom and Iraqi Freedom has provided a glimpse of the future potential of the emerging way of war. Constructed around the fundamental tenets of network-centric warfare and emphasizing high-quality shared awareness, dispersed forces, speed of command, and flexibility in planning and execution, the emerging way of war will result in U.S. forces conducting powerful effects-based operations to achieve strategic, operational, and tactical objectives across the full range of military operations. Transformation is yielding new sources of power. Because the global pace of change is accelerating, new sources of power will fuel our ability to maintain the advantage in a competitive landscape where yesterday's winner is tomorrow's target.



Military Transformation Vision for the Department of Defense

Military transformation will enable the U.S. Armed Forces to achieve broad and sustained competitive advantage in the 21st century. It comprises those activities that anticipate and create the future by co-evolving concepts, processes, organizations, and technologies to produce new sources of military power. The transformation of our armed forces will dramatically increase our strategic and operational responsiveness, speed, reach, and effectiveness, making our forces increasingly precise, lethal, tailorable, agile, survivable, and more easily sustainable.

Military Transformation A Strategic Approach

“First and foremost, the President and the Secretary elevated transformation to the level of strategy, and that is probably the most important lens through which we should look at transformation.”

*Vice Admiral (Ret.) Arthur K. Cebrowski,
Director, Force Transformation, Office of the Secretary of Defense,
Prepared Statement for the House Appropriations Committee,
Defense Subcommittee Hearing on Department of Defense Transformation,
March 13, 2002*

INTRODUCTION

The strategy for military transformation is a vital component of the United States’ overall defense strategy. The U.S. defense strategy, as described in the 2001 *Quadrennial Defense Review (QDR) Report* and the Department’s *Annual Report to the President and the Congress*, provides a necessary context for the discussion of military transformation strategy. At the same time, it highlights the important contribution the military transformation process is expected to make to our larger defense strategy, and indeed to the nation’s overall security strategy, as set forth in *The National Security Strategy of the United States of America (NSS)*. Chapter IX of the NSS, “Transform America’s National Security Institutions to Meet the Challenges and Opportunities of the Twenty-First Century,” emphasizes the importance of moving ahead with military transformation while maintaining near-term readiness and the ability to fight the war on terrorism.

Following an overview of U.S. defense strategy, the purpose of the military transformation strategy and the nature and scope of transformation within

the Department of Defense are examined, and a military transformation process is introduced.

U.S. Defense Strategy

The U.S. defense strategy seeks to defend freedom for the United States and its allies and friends and helps to secure an international environment of peace that makes the attainment of other goals possible. The Department of Defense has developed a new strategic framework to defend the nation and secure a viable peace.

Defense Policy Goals: The new U.S. defense strategy is based upon four major defense policy goals:

- **Assuring Allies and Friends:** The presence of U.S. forces overseas is a clear symbol of the U.S. commitment to allies and friends and to global stability. The U.S. military plays a critical role in assuring allies and friends that the nation will honor its obligations and be a reliable security partner. Through its willingness to use force in its own defense, defend others, and advance common goals, the United States demonstrates its resolve, its steadiness of purpose, and the credibility of the U.S. military to meet the nation’s commitments and responsibilities. A primary objective of U.S. security cooperation is to help allies and friends create favorable balances of military power in critical areas of the world to deter aggression or coercion.
- **Dissuading Future Military Competition:** Through its strategy and actions, the United States influences the nature of future military competitions. U.S. decisions can channel threats in certain directions and complicate military



planning for potential adversaries in the future. Therefore, well-targeted strategy and policy can help to dissuade other countries from initiating military competitions. The United States exerts influence through the conduct of its Research, Development, Test, and Evaluation (RDT&E) programs and by maintaining or advancing advantages in key military capabilities. Given the availability of advanced technology and systems to potential adversaries, dissuasion of future military competitions also requires the United States to explore revolutionary operational concepts, processes, capabilities, and organizational arrangements.

“Our goal is not simply to fight and win wars, it is to try to prevent wars. To do so, we need to find ways to influence the decision-makers of potential adversaries, to deter them not only from using existing weapons, but to the extent possible, try to dissuade them from building dangerous new capabilities in the first place. Just as the existence of the U.S. Navy dissuades others from investing in competing navies – because it would truly cost a fortune and would not succeed in providing a margin of military advantage – we must develop new capabilities that merely by our possessing them will dissuade adversaries from trying to compete.”

*Secretary of Defense Donald Rumsfeld,
at the National Defense University,
January 31, 2002*

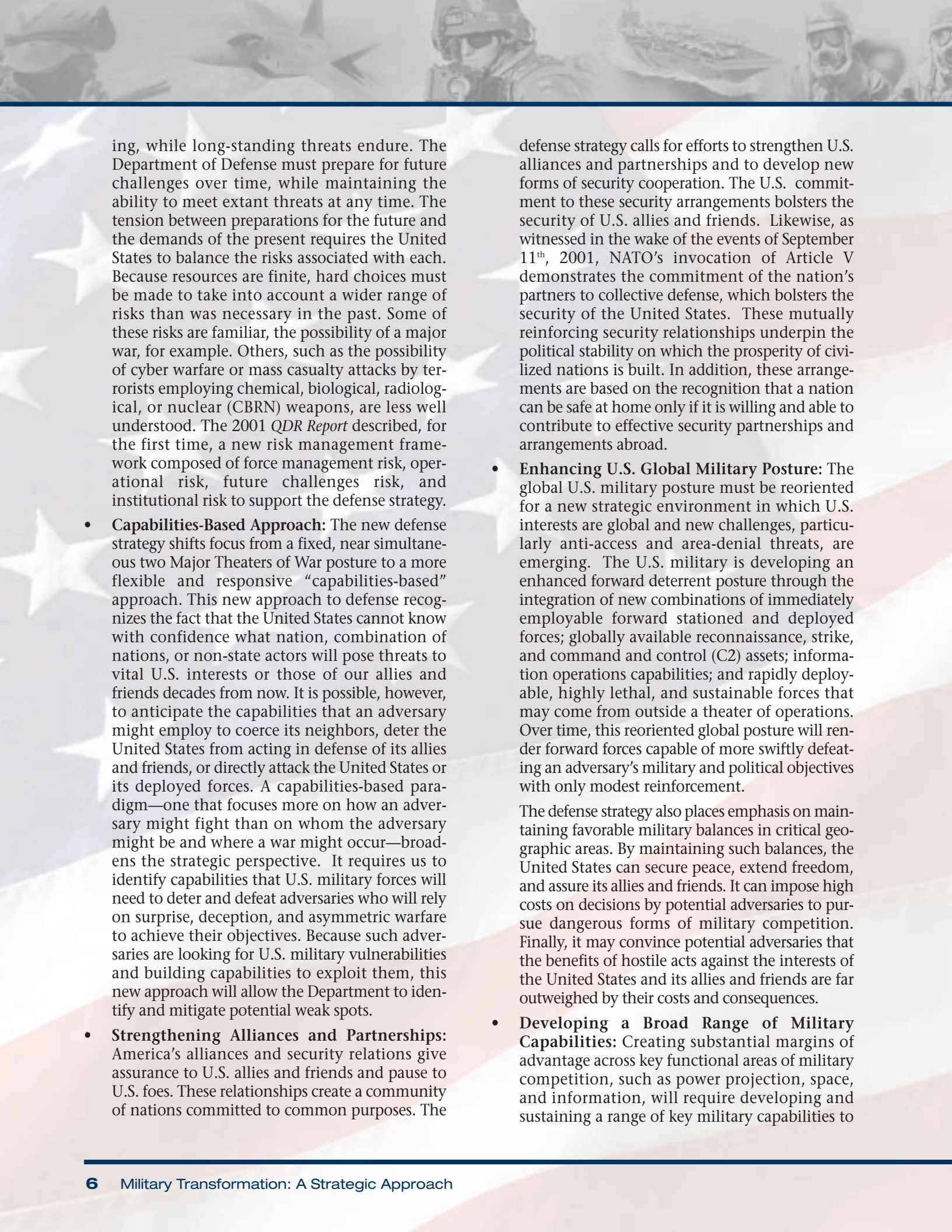
- **Detering Threats and Coercion Against U.S. Interests:** A multifaceted approach to deterrence requires forces and capabilities that provide the President with a wide range of options to discourage aggression or any form of coercion. In particular, it places emphasis on peacetime forward deterrence in critical areas of the world. It requires enhancing the offensive and defensive capabilities of forward deployed forces, coupled with global intelligence, strike, and information assets, in order to deter aggression or coercion with only modest reinforcement from outside the theater. Improving intelligence capabilities is vital to collect information regarding the intentions, plans, strengths, weaknesses, and disposition of key assets of actual or potential adversaries. Deterrence also requires non-nuclear forces that can strike with precision at mobile, fixed, and buried targets throughout the

depth of an adversary's territory and rapidly deployable and sustainable forces that can swiftly defeat any adversary.

- **If Deterrence Fails, Decisively Defeat Any Adversary:** U.S. forces must maintain the capability to support treaty obligations and defeat the efforts of adversaries to impose their will on the United States, its allies, or friends. U.S. forces must maintain the capability, at the direction of the President, to impose the will of the United States and its coalition partners on any adversaries, including states or non-state entities. Such a decisive defeat could include changing the regime of an adversary state or occupation of foreign territory until U.S. strategic objectives are met.

Strategic Tenets: A set of seven interconnected strategic tenets support the four U.S. defense policy goals. These tenets comprise the essence of U.S. defense strategy:

- **Defending the United States and Projecting U.S. Military Power:** Defending the nation from attack is the first priority of the U.S. defense strategy. As the events of September 11th, 2001, demonstrated, potential adversaries will seek to threaten the centers of gravity of the United States, its allies, and its friends—the very foundations of democracy and freedom in the world. As the U.S. military has increased its ability to project power at long-range, adversaries have noted the relative vulnerability of the U.S. homeland. They are placing greater emphasis on the development of capabilities to threaten the United States directly in order to counter U.S. operational advantages. The new U.S. defense strategy restores the emphasis once placed on defending the United States and its land, sea, air, and space approaches. It is essential to safeguard the nation's way of life, its political institutions, and the source of its capacity to project decisive military power overseas. In turn, the ability to project power at long ranges is essential to deter threats to the United States and, when necessary, to disrupt, deny, or destroy hostile entities at a distance. To preserve peace at home, the United States must be prepared both to project power abroad and to defend against attacks on the homeland.
- **Managing Risks:** The United States faces a world in which change occurs at an ever-increasing rate. New challenges are constantly emerg-



ing, while long-standing threats endure. The Department of Defense must prepare for future challenges over time, while maintaining the ability to meet extant threats at any time. The tension between preparations for the future and the demands of the present requires the United States to balance the risks associated with each. Because resources are finite, hard choices must be made to take into account a wider range of risks than was necessary in the past. Some of these risks are familiar, the possibility of a major war, for example. Others, such as the possibility of cyber warfare or mass casualty attacks by terrorists employing chemical, biological, radiological, or nuclear (CBRN) weapons, are less well understood. The 2001 *QDR Report* described, for the first time, a new risk management framework composed of force management risk, operational risk, future challenges risk, and institutional risk to support the defense strategy.

- **Capabilities-Based Approach:** The new defense strategy shifts focus from a fixed, near simultaneous two Major Theaters of War posture to a more flexible and responsive “capabilities-based” approach. This new approach to defense recognizes the fact that the United States cannot know with confidence what nation, combination of nations, or non-state actors will pose threats to vital U.S. interests or those of our allies and friends decades from now. It is possible, however, to anticipate the capabilities that an adversary might employ to coerce its neighbors, deter the United States from acting in defense of its allies and friends, or directly attack the United States or its deployed forces. A capabilities-based paradigm—one that focuses more on how an adversary might fight than on whom the adversary might be and where a war might occur—broadens the strategic perspective. It requires us to identify capabilities that U.S. military forces will need to deter and defeat adversaries who will rely on surprise, deception, and asymmetric warfare to achieve their objectives. Because such adversaries are looking for U.S. military vulnerabilities and building capabilities to exploit them, this new approach will allow the Department to identify and mitigate potential weak spots.
- **Strengthening Alliances and Partnerships:** America’s alliances and security relations give assurance to U.S. allies and friends and pause to U.S. foes. These relationships create a community of nations committed to common purposes. The

defense strategy calls for efforts to strengthen U.S. alliances and partnerships and to develop new forms of security cooperation. The U.S. commitment to these security arrangements bolsters the security of U.S. allies and friends. Likewise, as witnessed in the wake of the events of September 11th, 2001, NATO’s invocation of Article V demonstrates the commitment of the nation’s partners to collective defense, which bolsters the security of the United States. These mutually reinforcing security relationships underpin the political stability on which the prosperity of civilized nations is built. In addition, these arrangements are based on the recognition that a nation can be safe at home only if it is willing and able to contribute to effective security partnerships and arrangements abroad.

- **Enhancing U.S. Global Military Posture:** The global U.S. military posture must be reoriented for a new strategic environment in which U.S. interests are global and new challenges, particularly anti-access and area-denial threats, are emerging. The U.S. military is developing an enhanced forward deterrent posture through the integration of new combinations of immediately employable forward stationed and deployed forces; globally available reconnaissance, strike, and command and control (C2) assets; information operations capabilities; and rapidly deployable, highly lethal, and sustainable forces that may come from outside a theater of operations. Over time, this reoriented global posture will render forward forces capable of more swiftly defeating an adversary’s military and political objectives with only modest reinforcement.

The defense strategy also places emphasis on maintaining favorable military balances in critical geographic areas. By maintaining such balances, the United States can secure peace, extend freedom, and assure its allies and friends. It can impose high costs on decisions by potential adversaries to pursue dangerous forms of military competition. Finally, it may convince potential adversaries that the benefits of hostile acts against the interests of the United States and its allies and friends are far outweighed by their costs and consequences.

- **Developing a Broad Range of Military Capabilities:** Creating substantial margins of advantage across key functional areas of military competition, such as power projection, space, and information, will require developing and sustaining a range of key military capabilities to

enable U.S. forces to prevail over current challenges and to hedge against and counter future threats. Building upon the current superiority of U.S. conventional forces, this range of military capabilities will include those required for conducting information operations, ensuring U.S. access to distant theaters, defending against threats to the United States and allied territory, and protecting U.S. assets in space. It will also require exploiting U.S. advantages in superior technological innovation, unmatched space and intelligence capabilities, sophisticated military training, and an ability to integrate highly distributed military forces in synergistic combinations to conduct complex joint military operations.

- **Transforming Defense:** Finally, the defense strategy calls for the transformation of the Department of Defense. Transformation is at the heart of the new strategy. It includes new technologies, but goes well beyond this to include new operational concepts and organizational structures and relationships. To transform the Department, the culture of the institution must change in important areas. Change must include the planning, budgeting, acquisition, and personnel management systems in place today. Without change, the current defense program will only become more expensive to maintain over time, resulting in the loss of opportunities available to the United States today.

“... our overall goal is to encourage a series of transformations that in combination can produce a revolutionary increase in our military capability and redefine how war is fought. The capabilities demonstrated in Afghanistan show how far we have come in the ten years since the Persian Gulf War. But they are just a glimpse of how far we can still go.”

*Deputy Secretary of Defense Paul Wolfowitz,
Testimony before the Senate Armed
Services Committee,
April 9, 2002*

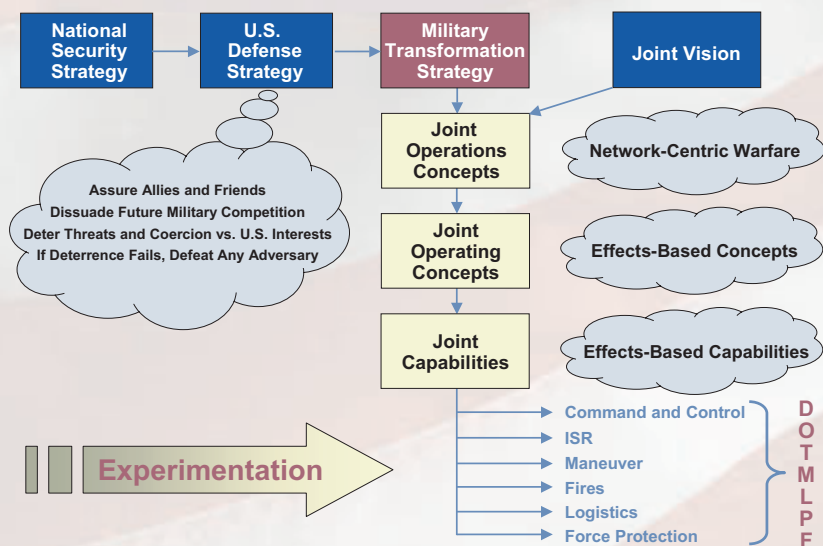


Figure 1. Military Transformation – Strategy to Concepts to Capabilities

Purpose of Military Transformation Strategy

There are many perspectives through which military transformation may be viewed. At the highest level, President Bush has elevated transformation to the level of defense strategy. He has repeatedly emphasized the vital importance of military transformation to the future defense of the United States. The significance of military transformation to U.S. defense strategy is also apparent by its inclusion as one of the seven interconnected strategic tenets.

The transformation strategy is a strategy for large-scale innovation. More specifically, transformation strategy is about how a competitive space is selected. The strategy identifies the attributes within that space which will ultimately lead to an advantage for the U.S. military. It must answer the fundamental questions of how one shapes the scope, pace, and intensity of competition.

The 2002 NSS states that the goal of military transformation “must be to provide the President with a wider range of military options to discourage aggression or any form of coercion against the United States, our allies, and our friends . . . Our forces will be strong enough to dissuade potential adversaries from pursuing a military build-up in hopes of surpassing, or equaling, the power of the United States.”

As illustrated in **Figure 1** above, military transformation begins at the strategic level. Guided by

U.S. defense strategy, the military transformation strategy, and the Joint Vision, joint warfighting concepts are developed. The new *Joint Operations Concepts (JOpsC)* is an overarching joint concept that provides the operational context for military transformation and sufficient detail for the development of subordinate joint operating concepts (JOCs). Ultimately, the *JOpsC* and the JOCs will focus the development and acquisition of joint warfighting capabilities across doctrine, organization, training, materiel, leadership and education, personnel, and facilities.

What Is Transformation?

Transformation within the Department of Defense is an effort that requires the active participation of all major components of the organization. The Department describes transformation as:

A process that shapes the changing nature of military competition and cooperation through new combinations of concepts, capabilities, people and organizations that exploit our nation's advantages and protect against our asymmetric vulnerabilities to sustain our strategic position, which helps underpin peace and stability in the world. (*Transformation Planning Guidance*, April 2003, p. 3)

First and foremost, transformation is a continuing process. It does not have an end point. Transformation anticipates and creates the future and deals with the co-evolution of concepts, processes, organizations, and technology. Profound change in any one of these areas necessitates change in all. Transformation creates new competitive areas and competencies and identifies, leverages, or creates new underlying principles for the way things are done. Transformation also identifies and leverages new sources of power. The overall objective of these changes is to sustain U.S. competitive advantage in warfare.

Military transformation is about changing the culture of the U.S. Armed Forces. Therefore, transformational activity must facilitate a culture of change and innovation in order to maintain competitive advantage in the information age. That culture must foster leadership, education, processes, organizations, values, and attitudes that encourage and reward meaningful innovation. Individually and institutionally, holding on to the past is a

result of the natural need to define order in the midst of instability. Individuals and institutions tend to follow what they know and do best because past success becomes the safest predictor of survival in the face of uncertainty.

Transformation is a vital component of an overall corporate strategy for innovation, a strategy that also includes another vital component, modernization. Transformation and modernization are not in competition, but they require balance. They are different processes, and any large organization like the Department of Defense must undertake both to be successful. A good corporate innovation strategy has at least three distinct parts, as shown in **Figure 2**:

- **Focus on Core Missions, Continuous Small Steps:** This is the bread and butter of any organization and the main effort of any corporate innovation effort. It is where modernization, recapitalization, and taking care of the capital plant occur. It is the realm of evolutionary changes where an organization tries to get better at what it is already doing. The U.S. military must continually search for ways to take small steps to improve its current competitive position.
- **A Series of Many Exploratory Medium Jumps:** This is where we push out the boundaries of core competencies and try to create something new, resulting in significant capability improvements. Changes in this category are within the existing paradigm. An example of this is the U.S. Navy's pursuit of unmanned underwater vehicles for shallow water mine hunting and antisubmarine warfare. Those missions are already core competencies for the Navy, but insofar as using this technology in new ways makes it possible to do

Continuous small steps

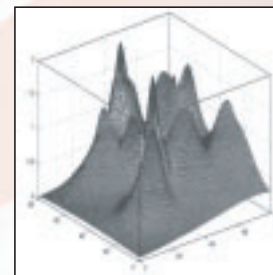
Incremental capability enhancements generally termed "modernization"

Many medium jumps

Significant capability improvements within the current American Way of War

A few big jumps

New rule sets that leverage new sources of military power, creating a new American Way of War



Create a New Game with New Rules

Figure 2. A Corporate Strategy for Innovation



something that the Navy could not do before, it is transformational. This kind of change involves doctrine and organization as well as technology.

- **Making a Few Big Jumps:** These are big jumps, things that will change a military service, the Department of Defense, or even the world. From time to time, we must attempt to make very large jumps and explore things that are well away from our core competencies. The Global Positioning System (GPS), which gave the U.S. Armed Forces a tremendous advantage over Iraqi forces during Operation DESERT STORM, is a prime example. Its advent changed the military, the Department, and civil society. Another example was the U.S. Army's decision to seek to "own the night." The Army made a huge jump by combining new technology with innovative operational concepts. In so doing, it changed the character of land warfare.

Our recent experience in Afghanistan during the conduct of Operation Enduring Freedom underscores the point that transformation is not just about new weapons or new technology. The crucial victory at Mazar-e-Sharif set in motion the Taliban's dramatic fall from power. What actually won the battle was a combination of the ingenuity of the U.S. Special Operations Forces on the ground, advanced precision-guided munitions delivered by U.S. aircraft, and the courage of our Afghan allies. In this case, transformation involved new ideas and concepts, as well as the adaptation of old weapons to meet the challenges of a new century. The U.S. Air Force B-52s, which played such an important role in this battle, were much older than the pilots who flew them, but they employed modern electronics and avionics and dropped "smart bombs" guided by GPS.

"But really, this is precisely what transformation is all about. Here we are in the year 2002, fighting the first war of the 21st century, and the horse cavalry was back and being used, but being used in previously unimaginable ways. It showed that a revolution in military affairs is about more than building new high tech weapons, though that is certainly part of it. It's also about new ways of thinking, and new ways of fighting."

*Secretary of Defense Donald Rumsfeld
at the National Defense University,
January 31, 2002*

Shaping the nature of military competition ultimately means the redefinition of standards for military success by accomplishing military missions that were previously unimaginable or impossible except at prohibitive risk and cost. The U.S. Armed Forces understand current standards for success because they train to exacting standards in the most realistic fashion possible. From this baseline, we can compare and assess new operating concepts that employ new organizational constructs, capabilities, and doctrine for achieving military objectives and make a determination as to whether they are sufficiently transformational to merit major investments. But new capabilities rarely outperform the old when they first appear. Often this is because the technologies involved may be only nascent, and the required doctrinal or organizational changes are incomplete. So there is a danger in culling new capabilities too soon.

Transformational change will allow us to preserve, and potentially extend, our military superiority over adversaries. Eventually, such efforts will render previous ways of warfighting obsolete and change the measures of success in military operations.

Scope of Transformation

Overall, the Department's transformation must address three major areas: how we do business inside the Department, how we work with our interagency and multinational partners, and how we fight.

- **Transforming How We Do Business:** Forces employing transformational warfighting concepts require transformed processes that produce the timely results demanded by 21st century security challenges. The Department is currently pursuing transformational business and planning practices such as adaptive planning; a more entrepreneurial, future-oriented, capabilities-based resource allocation planning process; accelerated acquisition cycles built on spiral development; output-based management; and a reformed analytic support agenda. Senior leadership must take the lead in fostering innovation and adaptation of information age technologies and concepts within their organizations and ensure that processes and practices that are antithetical to these goals are eliminated.

Among the most important initiatives already underway is a set of proposed legislative reforms to eliminate duplicative reporting require-



ments, transform fiscal authorities, and enhance the Department's ability to hire and retain highly skilled personnel. Pay raises and housing improvements to improve the quality of life for Service personnel and greater flexibility in managing the Department's human resources are both critical steps for sustaining transformation momentum in the Department. The Department must focus personnel policies on valuing people and intellectual capital as a strategic asset. The result is an altered risk-reward system that encourages innovation. Military personnel must be recruited and trained in accordance with their ability to operate in a constantly changing environment. That culture will foster leadership, education, process, organization, values, and attitudes that encourage and reward meaningful innovation.

Reform of the acquisition process is another priority of the Department's corporate transformation strategy. The Department is reducing acquisition cycle time and aligning acquisition with a new capabilities-based resource allocation program built around JOCs. Instead of building plans, operations, and doctrine around individual military systems as often occurred in the past, the Department will explicitly link acquisition strategy to future joint concepts in order to provide the capabilities necessary to execute future operations.

- **Transforming How We Work with Others:** The events of September 11th are causing us to rebalance our homeland security role with how we secure our global interests abroad. Transforming the way the Department integrates military power, including active duty, National Guard, and Reserve forces, with other elements of national power and with foreign partners will also help ensure that, when we employ military power, we do so consistent with the new strategic context. It is crucial to do so when dealing with terrorists and other unconventional fighters who attack non-combatants and otherwise engage in political-military conflict because they cannot be defeated by military means alone. Enhanced coordination with the interagency and across all levels of government (federal, state, and local) will promote increased cooperation, more rapid response, and the ability to conduct seamless operations.

Further guidance will be developed, particularly with respect to multinational cooperation. As the U.S. military transforms, our interests are served by making arrangements for international military cooperation to ensure that rapidly transforming U.S. capabilities can be applied effectively with allied and coalition capabilities. U.S. transformation objectives should be used to shape and complement foreign military developments and priorities of likely partners, both in bilateral and multilateral contexts.

- **Transforming How We Fight:** The strategy for transformation presented in the Department's *Transformation Planning Guidance (TPG)* includes a detailed approach to force transformation, or the transformation of how we fight. Force transformation depends on the development of future joint warfighting concepts and experimentation designed to evaluate these new concepts. It includes the full range of supporting military capability areas: doctrine, organization, training, materiel, leadership and education, personnel, and facilities.

The transformation process must broadly develop forces capable of defending the U.S. population, homeland, and interests, as well as swiftly defeating an adversary from a posture of forward deterrence with minimum reinforcements. No aspect of defense should be left untouched if we are to maintain a competitive advantage in the information age.

Military Transformation Process

The military transformation process depicted in **Figure 3** begins with an analysis of the strategy, threat, and technology drivers for transforming the force and the six critical operational goals, identified in the 2001 *QDR Report*, which provide the focus for the Department's transformation efforts. Transformational capabilities will be attained when the results of concept development and experimentation are implemented in selected elements of the U.S. Armed Forces.

The compelling need for military transformation is presented in the following chapter, which includes a discussion of the new international security environment and the four imperatives that lend urgency to the requirement for military transformation: strategy, technology, threat, and risk mitigation. The third chapter addresses the six operational

goals and how they will guide military transformation, ultimately shifting the balance of U.S. forces and capabilities. The fourth chapter focuses on the four transformation pillars that constitute the essential elements of the Department's military transformation strategy, outlining current plans for the implementation of each. The fifth and final

chapter, "The Emerging Way of War," describes the evolving U.S. approach to the conduct of joint warfare, designed around the fundamental tenets of network-centric warfare (NCW) and featuring deep sensor reach; high-quality shared awareness; agile, rapidly deployable forces; speed of command; and flexibility in planning and execution.

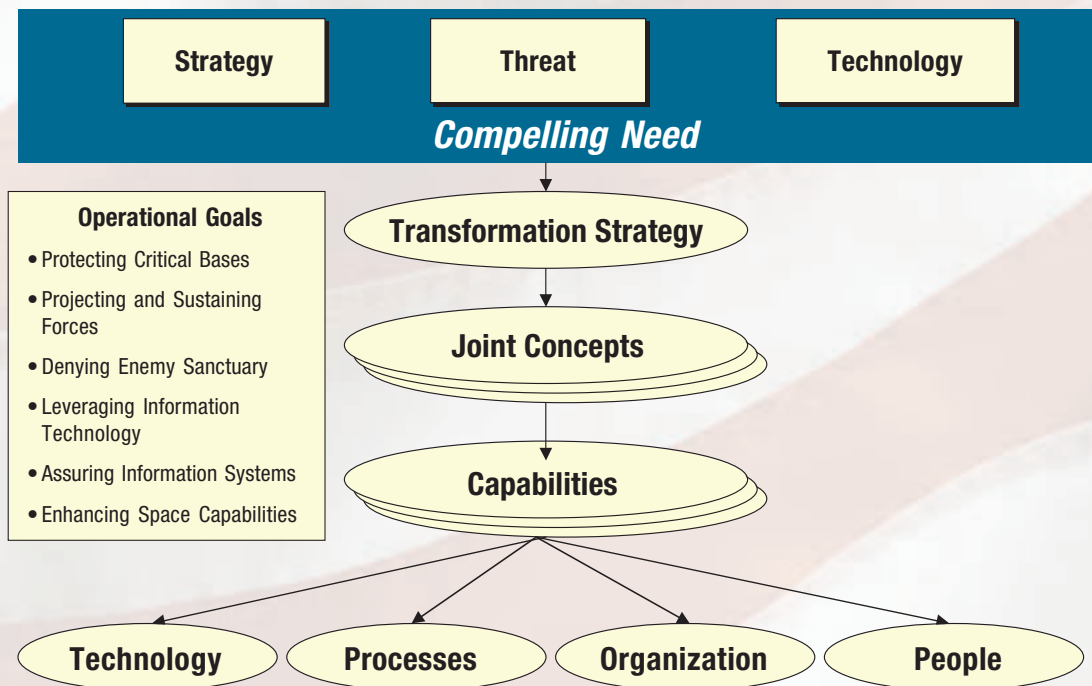


Figure 3. Military Transformation Process

COMPELLING NEED FOR MILITARY TRANSFORMATION

"The most important transformation that we're facing is the transformation from the industrial to the information age. To the extent that we do that well, all our other efforts in transformation will prosper. To the extent we don't, all of those efforts will be for naught."

*Vice Admiral (Ret.) Arthur K. Cebrowski,
Director, Force Transformation,
Office of the Secretary of Defense at the National Defense University,
January 31, 2002*

Although current U.S. military capabilities are superior to any existing conventional threat, our supremacy will rapidly diminish over time if we do not continue to enhance our military prowess. The U.S. Armed Forces must transform before our adversaries have closed the gap with our military capabilities or developed effective counters. In short, we must respond to a compelling and urgent need for military transformation. The changed global security environment, evident to all U.S. citizens since the terrorist attacks of September 11th, 2001, and the uncertainty of the future security environment make military transformation imperative.

The recent performance of U.S. forces during combat operations in Afghanistan and Iraq provides impressive evidence that ongoing transformation efforts in the Department are already paying dividends. However, we must not rest on our laurels. As Secretary of Defense Rumsfeld says in his foreword to the Department's *Transformation Planning Guidance (TPG)*, "There will be no moment at which the Department is 'transformed.' Rather we are building a culture of continual transformation, so that our armed forces are always several steps ahead of any potential adversaries."

Changed Security Environment

The American people were relieved when the Cold War ended a decade ago. With the demise of the Soviet Union and the emergence of a non-Communist Russia, we no longer faced an adversary whose stated intent was to destroy the United States. Americans saw the growth of market economics and governments based on representative democracy taking root around the globe. They saw a powerful

U.S. economic expansion creating unprecedented prosperity. There was a temptation to believe that this favorable circumstance was a permanent condition. Suddenly, the events of September 11th presented a different view of the world. It is now clear that the 21st century security environment is fundamentally different from the security environment we faced in the 20th century—in important ways, it is more complex and more dangerous.

An assessment of the current and future global security environment involves a great deal of uncertainty about the potential sources of military threats, the conduct of war in the future, and the form that threats and attacks against the nation will take. History has shown that rapid and unexpected changes, such as the collapse of the Soviet Union, can transform the geopolitical landscape. New military technologies can revolutionize the form of military competition and the nature of armed conflict in ways that render military forces and doctrines of the industrial age obsolete. Although contending with such uncertainty is a key challenge for U.S. defense planners, certain features and trends of the security environment define not only today's geopolitical and military-technical challenges, but also highlight critical operational challenges that the U.S. Armed Forces will need to master in the future.

Over the past several years, senior Department of Defense leaders determined that contending with uncertainty must be a central tenet in U.S. defense planning. They reasoned that planners would have to carefully consider a broad array of potential challenges to U.S. interests and the nation's inherent vulnerability to asymmetric attacks. Senior Department leaders concluded that defense planners would have to assume that surprise is the norm, rather than the exception. The compelling need for military transformation is examined in terms of four imperatives: strategy, technology, threat, and risk mitigation.

Military Transformation – A Strategic Imperative

Transformation is necessary to ensure that U.S. forces continue to operate from a position of overwhelming military advantage in support of strategic objectives. We cannot afford to react to threats slowly or have large forces tied down for lengthy periods. Instead, U.S. forces require sufficient power and agility to deter from a forward posture and to swiftly defeat potential adversaries.

Indeed, our strategy requires agile, network-centric forces that can take action from a forward position (rapidly reinforced from other areas) and defeat adversaries swiftly and decisively while conducting an active defense of U.S. territory. Such forces are also essential for deterring conflict, dissuading threatening adversaries, and assuring others of our commitment to a peaceful and stable world. Over the long term, our security and the prospects for peace and stability for much of the rest of the world depend on the success of transformation.

We are at the confluence of three broad trends: the movement of our society and much of the world from the industrial age to the information age; the appearance of an expanded array of threats in a more uncertain context; and vast technological opportunities available to friend and foe alike. The Department's transformation will be shaped and influenced by the emerging realities of competition in the information age and the concept of network-centric warfare (NCW):

“NCW will provide increasing return on investment by providing our most important resource – our people – the high quality shared awareness necessary to speed mission accomplishment. NCW capabilities will accelerate our ability to know, to decide, and to act. . . . NCW is at the heart of military adaptivity – the ability to respond to uncertainty in dynamic situations, day-to-day, at every level of warfare, and across the range of potential military operations.”

*Vice Admiral (Ret.) Arthur K. Cebrowski,
Director, Force Transformation, Office of the Secretary of Defense,
Prepared Statement for the Senate Armed Services Committee,
April 9, 2002*

- **Network-Centric Warfare:** In the information age, power is increasingly derived from information sharing, information access, and speed. Thus, NCW is the military expression of the information age. “Network-centric warfare” refers to the combination of emerging tactics, techniques, and technologies that a networked force employs to create a decisive warfighting advantage. It provides a new conceptual framework with which to examine military missions, operations, and organizations in the information age. As an organizing principle, NCW accelerates our ability to know, decide, and act by linking sensors, communications systems, and weapons systems in an interconnected grid. A warfighting force with networked capabilities

allows a commander to analyze the battlespace, rapidly communicate critical information to friendly combat forces, and marshal a lethal combination of air, land and sea capabilities to exert massed effects against an adversary. As shown in **Figure 4**, a force employing network-centric operations will be able to move into a new competitive space, thereby gaining a decided advantage over a force conducting traditional platform-centric operations. For a more detailed discussion of NCW and the new rules of information age warfare, see the fifth chapter, “The Emerging Way of War.”

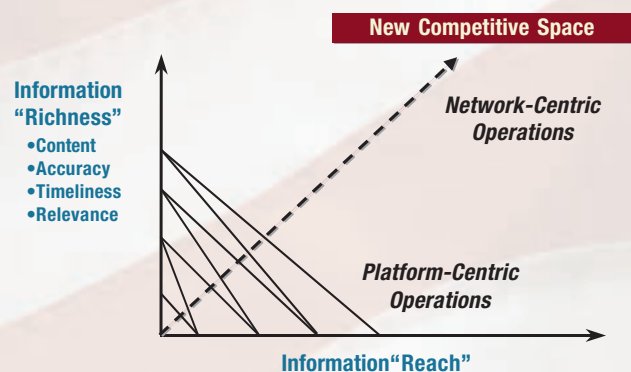


Figure 4. The Networked Competitive Advantage

- **Difficulty with the Status Quo:** Some critics question the need to transform what are widely acknowledged as the world's best military forces. However, history and current trends indicate that merely attempting to hold on to existing advantages is a shortsighted approach and may prove disastrous. As the distribution of economic wealth continues to flatten around the globe, as other countries begin to enjoy steady economic growth and the benefits of a better educated, more technologically skilled population, and most importantly, as the dispersion of information age technology and the rate of technological change continue to accelerate, current U.S. military advantages could diminish comparatively.
- **Rising Force-on-Force Challenges:** Over the longer term, some adversaries hope the United States will become complacent. They hope that they will be able to better exploit diffusion of knowledge and information technology (IT) as the world continues to move from the industrial to the information age, and thereby negate or leap ahead of current U.S. military advantages. Potential adversaries are developing the ability

to confront U.S. advantages more directly. They are developing new electronic and cyber warfare capabilities, means to counter or negate distinct U.S. advantages such as our space capabilities, and anti-access capabilities such as submarines, mines, and cruise and ballistic missiles. They also are investigating innovative operational and tactical concepts to better employ advanced asymmetric technologies.

- **Historic Opportunity:** The evolving threat environment and our strategic response reflect an underlying trend in technology development. Throughout history, warfare has assumed the characteristics and used the technology of its era. Today we are witnessing the transition from the industrial age, with its emphasis on mass, to the information age where the power of distributed, networked forces and shared situational awareness will transform warfare. The Department must align itself with the ongoing information revolution, not just by exploiting IT but also by developing information-enabled organizational relationships and operating concepts. Victory in the Cold War opened a historic window of opportunity to do so because we are no longer consumed by the requirement to defend against a monolithic threat to our way of life. That window remains open so long as U.S. forces are much more capable of conducting traditional military operations than our most likely regional adversaries.
- **High Stakes:** If the United States fails to transform, our current military superiority and the relative peace, prosperity, and stability it supports will erode. In such circumstances, we would expect to see the more rapid emergence of a multi-polar world prone to major conflicts. Future military operations in such an environment would be conducted at much greater cost to the nation. At best, the United States would be forced to invest increasing shares of national wealth in forces with diminishing capabilities. At worst, we would eventually face the historic norm: a major battlefield reversal and the rapid rise of a major competitor. Success in transforming U.S. military forces means we will be able to execute our defense strategy with high confidence and less risk and to shape the international environment so that it is less rather than more hostile to U.S. interests.

Military Transformation – A Technological Imperative

Technology in the military sphere is developing as rapidly as the changes reshaping the civilian sector. The combination of scientific advancement and globalization of commerce and communications have contributed to several trends that significantly affect U.S. defense strategy and planning. Falling barriers to competition caused by ubiquitous, low-cost IT contribute significantly to the compelling need for military transformation. Some of these trends include the following:

- **Rapid Advancement of Military Technologies:** Technologies for sensors, information processing, precision guidance, and many other areas continue to advance at a rapid pace. States hostile to the United States are significantly enhancing their capabilities by integrating widely available commercial technologies into weapon systems and their armed forces. Conversely, these same advances offer the United States the opportunity to sustain and extend its advantages in key areas of military technology, systems, and operational practices. Exploiting and sustaining our current position of advantage requires not only technological innovation but also the co-evolution of operational concepts, new organizational adaptations, and training and experimentation.
- **Increasing Threat of Chemical, Biological, Radiological, and Nuclear Weapons and Ballistic Missiles:** The proliferation of chemical, biological, radiological, and nuclear (CBRN) technology, materiel, and expertise has provided potential adversaries with the means to directly challenge the safety and security of the United States and its allies and friends. The pace and scale of ballistic missile proliferation have exceeded earlier intelligence estimates and suggest that this challenge may grow at a faster pace than previously expected. Likewise, the biotechnology revolution and bio-terror portend a future with increasing threats of advanced and more sophisticated forms of attack. Hostile regimes and terrorist organizations will seek to acquire and use CBRN weapons and ballistic missiles to attack the vulnerabilities of the United States and other open societies.
- **Emergence of New Arenas of Military Competition:** Technological advances create the potential for new forms of competition in space



and cyber space. Space and information operations have become the backbone of networked, highly distributed commercial civilian and military capabilities. No nation relies more on space for its national security than the United States. Yet elements of the U.S. space architecture—ground stations, launch assets, and satellites in orbit—are threatened by capabilities that are increasingly available to potential enemies. This opens up the likelihood that assuring the use of space—while denying the use of space to adversaries—will become a key objective in future military competition. Similarly, many states are developing offensive information operations capabilities designed to attack military and commercial information systems.

- **Increasing Potential for Miscalculation and Surprise:** Together, these military-technical trends create an increased potential for miscalculation and surprise. In recent years, the United States has been surprised by the speed with which other states have progressed in developing weapons of mass destruction (WMD) and ballistic missiles. In the future, it is unlikely that the United States will be able to predict accurately how successfully other states will exploit new military technology and operational concepts, how rapidly potential or actual adversaries will acquire WMD and their delivery systems, or how competitions in space and cyber space will develop.

Military Transformation – A Threat Imperative

Although U.S. military forces enjoy significant advantages in many aspects of armed conflict, the U.S. will be challenged by adversaries that possess or seek capabilities and design novel concepts to overcome our advantages. However, it is possible to identify the trends that will provide adversaries with capabilities and opportunities to do harm to the United States. These trends include the following:

- **Diminishing Protection Afforded by Geographic Distance:** The geographic position of the United States does not provide immunity from direct attack on its people, territory, or infrastructure. Enemies are finding new ways to overcome the difficulties of geographic distance. It is clear that an increasing number of states have acquired or will soon acquire cruise and ballistic missiles of steadily increasing range. Moreover, economic globalization and the

increase in travel and trade across U.S. borders have created new vulnerabilities for hostile states and actors to exploit and opportunities for these entities to perpetrate devastating attacks on the U.S. homeland.

- **Emergence of Regional Threats:** Regional powers are developing capabilities to threaten stability in regions critical to U.S. interests. In particular, Asia is gradually emerging as a region susceptible to large-scale military competition. Along a broad arc of instability that stretches from the Middle East to Northeast Asia, there is a volatile mix of rising and declining regional powers. The governments of some of these states are vulnerable to radical or extremist internal political forces and movements. Many of these states field large militaries and already have or possess the potential to develop or acquire WMD. Iran and North Korea, for example, are arming with long-range missiles and have acquired or are seeking to acquire WMD. These regimes continue to support global terrorist organizations and to terrorize their own people.
- **Growing Asymmetric Threats:** Over the past decade, potential adversaries have attempted to compensate for U.S. conventional military superiority by developing asymmetric approaches and capabilities. Terrorists attacked non-combatants; other adversaries used low-end indiscriminate weapons such as mines. As mentioned previously, adversaries such as Iran and North Korea are investing heavily in WMD and a wide range of delivery methods in hopes of deterring or frustrating the deployment and employment of highly lethal U.S. combat capabilities. Both these trends present significant challenges but also reflect the current U.S. advantages in conventional forces.
- **Increasing Threats from Weakened States and Ungoverned Areas:** The absence of capable or responsible governments in many countries in wide areas of Asia, Africa, and the Western Hemisphere creates a fertile ground for non-state actors to engage in terrorism, acquisition of CBRN weapons, illegal drug trafficking, and other illicit activities across state borders. A terrorist underworld—including such groups as al Qaeda, Hamas, Hezbollah, Islamic Jihad, the al-Aqsa Martyrs Brigades, and Jaish-I-Mohammed—operates in such areas. In an era of catastrophic terrorism, the United States cannot afford to ignore the anarchy that threatens a number of regions of the world.



In several regions, the inability of some states to govern their societies, safeguard their military armaments, and prevent their territories from serving as sanctuary to terrorists and criminal organizations poses a threat to stability and places demands on U.S. forces. The recent history of Afghanistan, including the brutal reign of the Taliban and the development of training bases and other facilities by al Qaeda, provides an example of the security implications for the United States of such weak or ungoverned areas. Conditions in some states, including some with nuclear weapons, demonstrate that threats can grow out of the weakness of governments as much as out of their strength.

- **Diffusion of Power and Military Capabilities to Non-State Actors:** Terrorist groups possess both the motivation and capabilities to conduct devastating attacks on U.S. territory, citizens, and infrastructure. Often these groups have the support of state sponsors or enjoy sanctuary and the protection of states, but some have the resources and capabilities to operate without state sponsorship. Terrorist networks and their supporters are exploiting globalization and actively seeking CBRN technology.
- **Increasing Diversity in the Sources and Unpredictability of the Locations of Conflict:** Together, these trends produce a geopolitical setting that is increasingly complex and unpredictable. Unlike the recent past, the United States will not be able to develop its military forces and plans primarily to confront a specific adversary in a specific geographic area. The United States could face the need to intervene in unexpected crises against opponents with a wide range of capabilities. Moreover, these interventions may take place in distant regions where urban environments, other complex terrain, and varied climatic conditions present major operational challenges.

Military Transformation – A Risk Mitigation Imperative

Managing risks, one of the seven strategic tenets of the defense strategy, is central to the Department's new way of thinking about defense. In an enterprise as complex as the Department of Defense, creating a framework to manage responses to the different sources of risk is essential. The Department's risk management framework is based on the view that there are four categories of risk that affect the ability of the United States to achieve its defense policy goals:

- **Force management risk** results from issues affecting the ability to recruit, train, equip, and retain sufficient numbers of quality personnel and sustain the readiness of the force while accomplishing its many operational tasks.
- **Operational risk** stems from factors shaping the ability to achieve military objectives in a near-term conflict or other contingency.
- **Future challenges risk** derives from issues affecting the ability to invest in new capabilities and develop new operational concepts needed to dissuade or defeat mid- to long-term military challenges.
- **Institutional risk** results from factors affecting the ability to develop management practices and controls that use resources efficiently and promote the effective operation of the Defense establishment.

A failure to address any one of these sources of risk could imperil U.S. capabilities. In the past, the Department tended to over-invest in minimizing the near-term operational risks while under-investing in the other categories. In particular, we have tended to focus on near-term operational risk mitigation at the expense of future challenges risk. The new risk management framework provides a system to ensure that sufficient attention and resources are put against the needs of maintaining a capable and ready force, the requirements of near-term operations and contingencies, the demands of transforming the force for the future, and the imperatives to streamline and modernize internal processes in the Department.

Military transformation is a key to the mitigation of the future challenges risk. In light of the dynamic changes in the security environment, a premium has been placed on the need to manage future challenges risk. In short, the Department of Defense has accepted the need to place greater priority on investments to meet future challenges. The mismatch between present U.S. forces and the requirements of responding to the potential capabilities of future adversaries is becoming more apparent. The Department must be able to define transformation investments that address future risk with enough specificity that they can be balanced with the other three primary risk areas. Although many elements of the existing force will continue to contribute to U.S. capabilities, there is an increasing need to develop new, leading-edge capabilities. The events of September 11th, 2001, made clear the danger of postponing preparations for the future. We must prepare now to anticipate future surprises and thereby mitigate their effects.

SIX CRITICAL OPERATIONAL GOALS

"On Sept 11, America's contract with the Department of Defense was torn up and a new contract is being written."

*Vice Admiral (Ret.) Arthur K. Cebrowski,
Director, Force Transformation, Office of the Secretary of Defense,
at the National Defense University,
July 9, 2002*

The purpose of military transformation is to maintain or improve U.S. military preeminence in the face of unpredictable, potentially disproportionate changes in the strategic security environment. Transformation must therefore be focused on emerging strategic and operational challenges and the opportunities created by these challenges. As mentioned in the first chapter, the Secretary of Defense has identified six critical operational goals. These goals provide the focus for the Department's transformation efforts. As shown in **Figure 5**, three are mission-oriented goals and three are enabling goals.

Over time, the continued focus of the Department's force transformation efforts on the development of the capabilities necessary to achieve

these six operational goals will help shift the balance of U.S. forces and broaden their capabilities. First and foremost, the Department will seek to deter and, if necessary, defeat the full range of threats forward. Attaining these six goals will help us do that in a rapidly changing world.

Protecting Critical Bases and Defeating Chemical, Biological, Radiological, and Nuclear Weapons

Above all, U.S. forces must protect critical bases of operations and defeat weapons of mass destruction (WMD) and their means of delivery. No base of operations is more important than the U.S. homeland. Defending the U.S. homeland from external attack is the foremost responsibility of the U.S. Armed Forces. Vast oceans and good neighbors do not insulate the United States from military attacks that emanate from abroad. The attacks of September 11th revealed the vulnerability of our nation's open society to terrorist attacks. The lethal anthrax letters sent in the fall of 2001 demonstrated the potentially grave danger posed by terrorists armed with chemical, biological, radiological, and nuclear (CBRN) weapons.

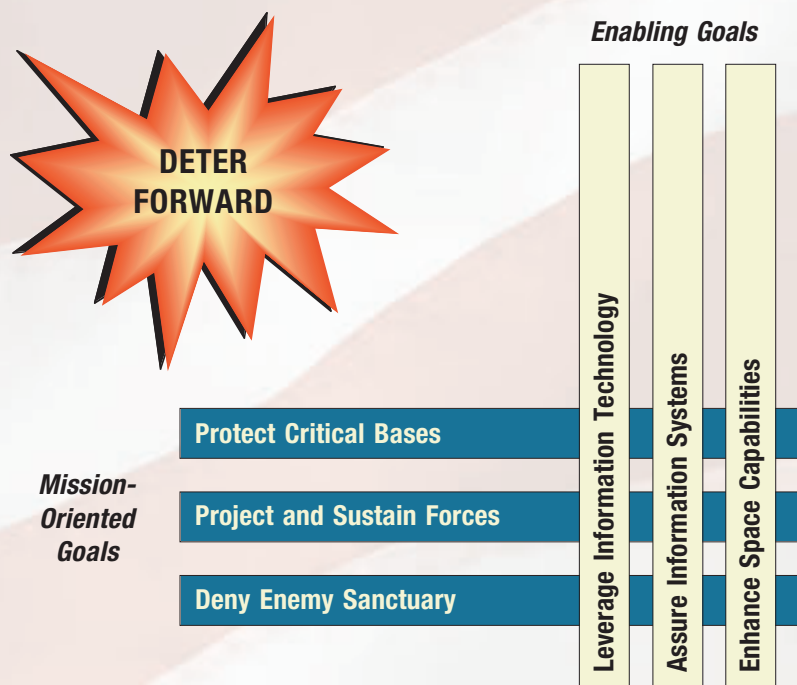


Figure 5. Six Operational Goals



Future adversaries will have a range of new means with which to threaten the United States, both at home and abroad. As discussed in the previous chapter, these means will include new forms of terrorism: advanced CBRN weapons, ballistic and cruise missiles, and weapons of mass disruption, such as information warfare attacks on critical information infrastructure. The Department is addressing these emerging operational challenges. For example, it has refocused its missile defense program to better defend U.S. territory, deployed forces, allies, and friends against ballistic missiles of any range. It has also emphasized science and technology programs aimed at defending against advanced biological threats.

Projecting and Sustaining Forces in Anti-Access Environments

Future adversaries are seeking capabilities to render ineffective much of the current U.S. military's ability to project military power overseas. Today, U.S. power projection depends heavily on access to large overseas bases, airfields, and ports. Saturation attacks by ballistic or cruise missiles armed with CBRN warheads could deny or disrupt U.S. entrance into a theater of operations. Advanced air defense systems could deny access to hostile airspace to all but low-observable aircraft. Military and commercial space capabilities, over-the-horizon radars, and low-observable unmanned aerial vehicles could give potential adversaries the means to conduct wide-area surveillance and track and target U.S. forces. Anti-ship cruise missiles, advanced diesel-powered submarines, and sophisticated mines could threaten the ability of U.S. naval and amphibious forces to operate in littoral waters. Surreptitious attacks employing persistent chemical or biological warfare agents could deny strategic areas to U.S. forces and terrorize U.S. and allied populations.

New approaches for projecting power are needed to meet these threats. These approaches will place a premium on enhancing U.S. active and passive defenses against missiles and CBRN weapons; distributing forces throughout a theater of operations and developing new network-centric concepts of warfare; reducing the dependence of U.S. forces on major air and sea ports for insertion; increasing U.S. reliance on stealth, standoff, hypersonic, long-range, and unmanned systems for power projection; enhancing capabilities to project and sustain power directly

from an integrated seabase; continuing to improve capabilities for littoral engagements; and developing ground forces that are lighter, more lethal, more versatile, more survivable, more sustainable, and rapidly deployable. New approaches are also required to meet the challenges of sustaining U.S. forces in anti-access environments and to attain the goal of reducing our logistics footprint by 50 percent.

Denying Enemy Sanctuary

Adversaries are likely to seek to exploit territorial depth and the use of mobile systems, urban terrain, and concealment to their advantage. Mobile ballistic missile systems can be launched from extended range, exacerbating the anti-access and area-denial challenges. Space denial capabilities, such as ground-based lasers, can be located deep within an adversary's territory. Accordingly, a key objective of transformation is to develop the means to deny sanctuary to potential adversaries—anywhere and anytime. This will require the development and acquisition of robust capabilities to conduct persistent surveillance of vast geographic areas and long-range precision strike—persistent across time, space, and information domains and resistant to determined denial and deception efforts.

As the President has said, “When all of our military can continuously locate and track moving targets—with surveillance from air and space—warfare will be truly revolutionized.” Denying enemies sanctuary will also require the ability to insert special operations and other maneuver forces into denied areas and to network them with long-range precision strike assets. The awesome combination of forces on the ground with long-range precision strike assets was amply demonstrated in Afghanistan and Iraq. It provided a glimpse of the potential that future integration efforts could offer if consciously exploited through U.S. transformation and experimentation efforts.

Leveraging Information Technology

U.S. forces must leverage information technology (IT) and innovative network-centric concepts of operations to develop increasingly capable joint forces. New information and communications technologies hold promise for networking highly distributed joint and multinational forces and for ensuring that these forces have better situational awareness—about friendly forces and those of adversaries—than in the past.



Command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) systems draw combat power from the networking of a multitude of platforms, weapons, sensors, and command and control (C2) entities, which are collectively self-organized through access to common views of the battlespace.

In the war in Afghanistan, the United States demonstrated the ability to strike at global range with a variety of networked combat elements from all the Services. These included Special Operations Forces from all Services, the Air Force's intercontinental-range bombers, elements of two Army divisions, several Aircraft Carrier Battle Groups, and Marine Expeditionary Units. Yet, this joint action only hints at the potential opportunities that can be exploited by seamlessly connecting our air, sea, and ground forces in new and innovative ways.

IT holds vast potential for maximizing the effectiveness of our forces. We must move toward network-centric warfare (NCW); increase the importance of connectivity and interoperability as critical performance factors in the design and acquisition of C4ISR and weapons systems; increase the visibility of the Department's evolving Global Information Grid; and improve the Department's oversight processes—in requirements, programming, and acquisition—for assessing a range of capabilities rather than specific weapons platforms. The goal is to enable U.S. forces to better communicate with each other; maintain a continuous awareness of friendly, neutral, and enemy positions; and share the same, precise, real-time picture of the battlespace.

Assuring Information Systems and Conducting Information Operations

Information systems must be protected from attack, and new capabilities for effective information operations must be developed. The emergence of advanced information networks holds promise for

vast improvements in joint U.S. capabilities, and it also provides the tools for non-kinetic attacks by U.S. forces. These attacks can include operations that seek to shape the mind of an opponent, electronic warfare, and in some instances, computer network attack.

At the same time, the increasing dependence of advanced societies and military forces on information networks creates new vulnerabilities. Potential adversaries could exploit these vulnerabilities through their own computer network attacks. The falling barriers to entry in the information realm, brought about through declining costs and diffusion of technology, have increased the number of potential adversaries capable of conducting information attacks. Closely coordinating U.S. offensive and defensive capabilities, and effective integration of both with intelligence activities, will be critical to protecting the current U.S. information advantage.

Enhancing Space Capabilities

The Department of Defense must enhance the capability and survivability of its space systems. Activities conducted in space are critical to national security and the economic well-being of the nation. Both friends and potential adversaries will become more dependent on space systems for communications, situational awareness, positioning, navigation, and timing. In addition to exploiting space for their own purposes, future adversaries will likely also seek to deny U.S. forces unimpeded access to and the ability to operate through and from space. Space surveillance, ground-based lasers, space jamming capabilities, and proximity of micro-satellites will become increasingly available. A key objective for transformation, therefore, is not only to capitalize on the manifold advantages that space offers the United States but also to close off U.S. space vulnerabilities that might otherwise provoke new forms of competition. U.S. forces must ensure space control and thereby guarantee U.S. freedom of action in space in time of conflict.

FOUR PILLARS OF MILITARY TRANSFORMATION

“Along with experimentation, the development of joint operational concepts and operational architectures will drive material and non-material transformation solutions and establish standards for interoperability. . . . New operational concepts—the end-to-end stream of activities that define how force elements, systems, organizations, and tactics combine to accomplish military tasks—are critical to the transformation process.”

Deputy Secretary of Defense Paul Wolfowitz during testimony before the Senate Armed Services Committee, April 9, 2002

As mentioned in the first chapter, the Department’s transformation strategy is an extension of the U.S. defense strategy. The central purpose of our transformation strategy is to enable the Department to better manage two major transformation challenges, both of which arise from the need to invest scarce resources in transformation.

The first transformation challenge is the need to invest now in specific technologies and concepts that are deemed transformational while remaining open to other paths toward transformation. To transform the force, we must commit resources, yet remain detached enough from these commitments to continue an iterative process of innovation and experimentation that permits new insights to guide future investment decisions.

The second transformation challenge is the need to balance near-term operational needs against future risk in investment decisions. Postponing major investments in transformational capabilities while devoting the bulk of the available resources to satisfying nearer term operational needs raises the risk of being overtaken by more creative and daring adversaries. Progress on transforming military forces requires significant investments in those aspects of transformation that we are confident have some enduring benefits. Even in an environment of increasing defense budgets, dollars are limited. Therefore, this may result in canceling or significantly reducing expenditures on planned systems and investing in capabilities that we believe will reduce future risk.

Essential Elements of the Military Transformation Strategy

The Department’s overall strategy for transforming consists of three parts: transforming culture; transforming processes; and transforming capabilities through force or military transformation. The focus of this chapter is on the four Military Transformation Pillars identified by the Secretary of Defense. These four pillars constitute essential elements of the Department’s force transformation strategy (**Figure 6**):

- Strengthening joint operations
- Exploiting U.S. intelligence advantages
- Concept development and experimentation
- Developing transformational capabilities.

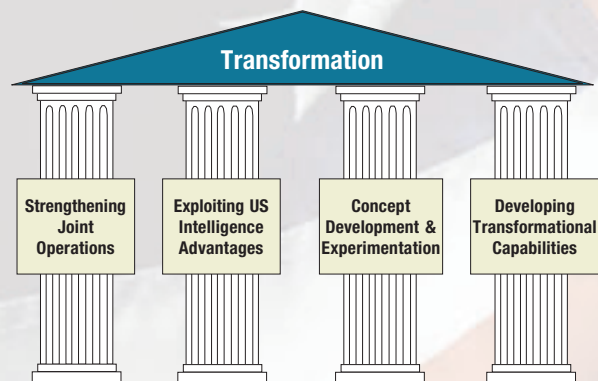


Figure 6. Military Transformation Pillars

Successful implementation of the Department’s military transformation strategy will accelerate the ongoing shift from an industrial age to an information age military. Future military operations will be conducted using more network-centric forces. They will be able to distribute forces more widely by increasing information sharing via a secure network that provides actionable information at all levels of command. This sharing, in turn, will create conditions for increased speed of command and opportunities for self-synchronization across the battlespace. The first step toward the development of a network-centric joint force is to invest more



now in the four transformation pillars. The goal is to produce military forces with the following capabilities by the end of the decade:

- **Effects-Based, Adaptive Planning:** Standing joint force headquarters (SJFHQ) will conduct effects-based, adaptive planning in response to contingencies, with the objective of defeating initial enemy threats using networked, modular forces capable of distributed, seamlessly joint, and combined operations.
- **Power Projection in Anti-Access Environments:** U.S. forces will defeat the most potent of enemy anti-access and area-denial capabilities through a combination of more robust contamination avoidance measures, mobile basing, and priority time-critical counterforce targeting.
- **Leverage Asymmetric Advantages:** U.S. forces will leverage the nation's asymmetric advantages to the fullest extent possible, drawing upon unparalleled command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) capabilities that provide global access, common relevant operational situational awareness of the battlespace, rapid and robust sensor-to-shooter targeting, and the necessary prerequisites for network-centric warfare (NCW).
- **Joint and Combined Forces Maneuver:** Joint and combined armed forces with superior situational awareness will maneuver more easily around battlefield obstacles and force the enemy to mass where precision engagement capabilities may be used to the maximum effect.

Military forces with the ability to execute these types of operations will be better able to accomplish the six operational goals discussed in the previous chapter. Committing to a set of investment priorities designed to accomplish these goals will permit us to better execute the new defense strategy and establish a solid foundation for further transformation. However, these are just intermediate objectives.

The transformation process must be comprehensive, ranging from science and technology efforts to fielded capabilities, but need not encompass the entire force simultaneously. Some aspects of transformation should be applied broadly, such as networking for shared awareness. The tension between retaining flexibility in transformation and the need

to invest now in prerequisite capabilities is greatly reduced by targeting. For example, we target the entire force now for networking, but we populate that network with new platforms more deliberately. "Vanguard" forces equipped with the new platforms will then be available to exploit new concepts and capabilities in operational environments and influence the development of the rest of the force. Heavier investments in the larger share of the force will follow after the smaller portion of the force has demonstrated in real-world operations and field trials that a critical mass of transformational capabilities can produce disproportionately favorable effects.

Pillar One: Strengthening Joint Operations

Pillar One focuses on strengthening joint operations through the development of joint concepts and architectures and the pursuit of other important jointness initiatives and interoperability goals.

Joint Concepts and Architectures: The key to the Department's transformation strategy is the development of future joint operating concepts (JOCs). They should be specific enough to permit identification and prioritization of transformation requirements inside the defense program, yet flexible enough to absorb valuable new ideas as they emerge. At no time should a single JOC be declared authoritative at the expense of continuing debate and research on alternative concepts. History has shown that, when an operating concept is declared the single solution, intellectual development ceases and the force is eventually overcome by its competitors. Joint concepts will be produced in three time frames:

- **Near-term (2-3 years out) Joint Operations:** Combatant Commander war plans, operational and training lessons learned, and joint doctrine, designed to achieve new strategy goals and updated in accordance with the Contingency Planning Guidance, will promote transformation through enhanced jointness and planning modifications. Combatant Commanders are developing war plans that take into account mid-term JOCs, lessons learned from ongoing operations, joint training and exercises, advanced concept technology demonstrations (ACTDs), and experiments. Current war plans and joint doctrine present a starting point, but not the standard, for experi-

mentation and future concepts. Because experimentation and new concepts frequently carry a new value structure or paradigm and are far less mature, direct comparison with the old is inappropriate. New metrics are required.

- **Mid-term (just beyond the Future Years Defense Plan) Joint Concepts:** Joint concepts will depict how the joint force of the future is to fight. They will address specific types of military operations across the range of military operations. Furthermore, they will be designed to meet the six critical operational goals established by the Secretary of Defense:

- **Joint Operations Concepts:** The overarching *Joint Operations Concepts (JOpsC)* document developed by the Chairman of the Joint Chiefs of Staff (CJCS), in coordination with the Commander, Joint Forces Command (JFCOM), provides the operational context for military transformation by linking strategic guidance with the integrated application of Joint Force capabilities. The *JOpsC* is a single overarching joint concept that will be continuously refined through experimentation. This overarching concept provides the conceptual framework to guide future joint operations and joint, Service, combat support, and defense agency concept development and experimentation. It also provides the foundation for the development and acquisition of new capabilities through changes in doctrine, organization, training, materiel, leadership and education, personnel, and facilities.

- **Joint Operating Concepts:** JOCs will further develop key areas of the *JOpsC*. Focusing at the operational level and above, JOCs describe how a Joint Force Commander (JFC) will plan, prepare, deploy, employ, and sustain a joint force given a specific operation or combination of operations. Among other things, JOCs specifically address how they con-

tribute to achieving the six operational goals. As shown in **Figure 7**, four initial cornerstone JOCs are being developed: homeland security, major combat operations, stability operations, and strategic deterrence. Like the *JOpsC*, the JOCs are expected to evolve over time to reflect insights gained from experimentation. The Service transformation roadmaps will identify the desired operational capabilities needed to implement the JOCs and the preferred means of obtaining those capabilities.

- **Integrated Architectures and Capabilities:** Integrated architectures describe in greater detail the relationship between the tasks and activities that generate effects on enemy forces and supporting operations. They identify where operations intersect and overlap and provide details on interoperability requirements. The architectures include not just material solutions but also doctrine, organization, and training requirements. These architectures will be used to prioritize capabilities based on their contribution to the realization of the JOCs.
- **Far-term (15-20 years out) Joint Vision:** The Joint Vision document is a long-range articulation of joint operations. It provides a broad statement of desired future concepts and capabilities required for future operations. The Joint Vision also provides the context for future joint and Service concepts development and experimentation.

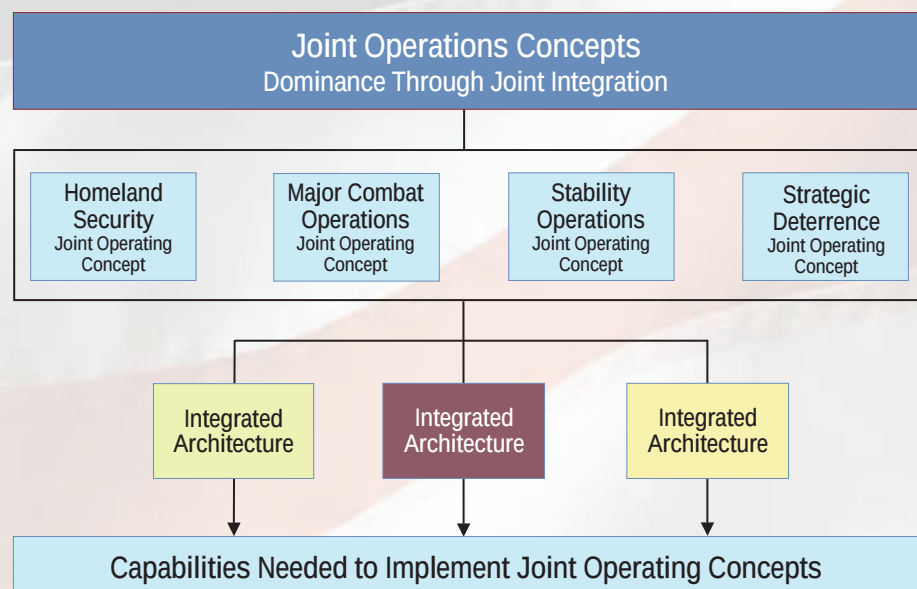


Figure 7. Joint Operations Concepts

Other Jointness Initiatives and Interoperability Goals: Increased interoperability is a key prerequisite for enhanced jointness and an imperative for the transforming force (**Figure 8**). The Department of Defense is in the process of strengthening joint operations through SJFHQ, improved joint command and control (C2), joint training transformation, and an expanded joint forces presence policy. Based on the results of interoperability studies, the Commander, JFCOM, is developing plans to address the following interoperability priorities:

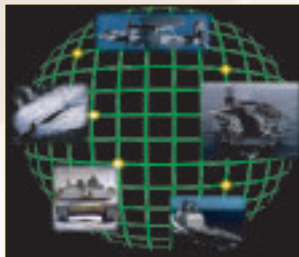
- Standard operating procedures and deployable joint C2 processes, organizations, and systems for the SJFHQ
- A common relevant operational picture for joint forces
- Enhanced intelligence, surveillance, and reconnaissance (ISR) capabilities
- Selected sensor-to-shooter linkages prioritized by contribution to the JOCs
- Reachback capabilities that provide global information access
- Adaptive mission planning, rehearsal, and joint training linked with C4ISR.

If you are not interoperable, you are...

Not on the net

Not contributing

Not benefiting



Not part of the information age

Figure 8. Imperative of Interoperability

Pillar Two: Exploiting U.S. Intelligence Advantages

The new defense strategy rests on a foundation of transforming intelligence capabilities. Our ability to defend America in the new security environment requires unprecedented intelligence capabilities to anticipate where, when, and how adversaries intend

to harm us. Our vision of a smaller, more lethal, and nimble joint force capable of swiftly defeating an adversary throughout the depth of the global battlespace hinges on these capabilities.

Today, the United States not only possesses unique intelligence capabilities, currently unmatched by any potential adversary, but it also has numerous efforts underway to improve and expand current intelligence capabilities. At the same time, U.S. military dependence on information is growing. This is particularly true in light of the Department's transition to NCW. Pillar Two involves the exploitation of U.S. intelligence advantages through multiple intelligence collection assets, global surveillance and reconnaissance, and enhanced exploitation and dissemination.

Increasing Demands on Intelligence Capabilities:

Demands on intelligence capabilities are certain to grow. Because potential adversaries recognize the importance of information superiority to U.S. strategy and operations, they are seeking to acquire similar advantage. To offset U.S. conventional military capabilities, they are also pursuing asymmetric strategies, including information operations, space warfare, and weapons of mass destruction (WMD).

These asymmetric threats pose daunting new intelligence challenges. To respond effectively, the Department will vigorously pursue new processes and procedures to better exploit existing assets while aggressively developing new technologies that offer great potential for responding to new threats and requirements. In particular, the Department will treat information operations, intelligence, and space assets not simply as enablers of current U.S. forces but rather as core capabilities of future forces.

Requirement to Transform Defense Intelligence Capabilities:

Intelligence—and how we use it—is the first line of defense against terrorists and the threats posed by hostile states. Originally designed around the priority of gathering enormous amounts of information about a massive, fixed object (e.g., the Soviet bloc), the U.S. intelligence community is now coping with the challenge of following a far more complex and elusive set of targets. We must transform our intelligence capabilities within the Department and build new ones to keep pace with the nature of these threats. Clearly, we must improve or redesign our intelligence system

so it is capable of providing unambiguous warning sooner. In a world of multiple terrorist threats and the increasingly widespread availability of WMD, the United States and our allies cannot afford to wait for the enemy to deliver the first blow. This is simply unacceptable. Yet, the challenge faced by the U.S. intelligence community is daunting because of the nature of terrorism.

Over the course of the next decade and beyond, the Department's intelligence capabilities must become more proactive, intrusive, networked, responsive, and integrated. The Department is making major investments now in global ISR capabilities, especially those that prepare the intelligence and operational battlespace by supporting the interoperability objectives previously identified. The Department's transformation strategy calls for such investments because they are critical prerequisites for the type of networked joint forces capable of achieving and fully exploiting decision superiority. The Department's investments in intelligence are also required to provide better warning of emerging crises, identify critical targets for effects-based campaigns, measure and monitor the progress of campaigns, and provide indicators of success.

Global Intelligence: Throughout the Cold War, the singular nature of the strategic threat from the Soviet Union provided U.S. intelligence with a remarkably stable target. Today, intelligence is required to provide political and military leaders with strategic and operational information on an increasingly diverse range of political, military, leadership, and scientific and technological developments worldwide:

- **Human Intelligence:** Experience gained during recent operations in Afghanistan and Iraq, as well as in other parts of the world, in the conduct of the global war on terrorism, has reinforced the need for improved human intelligence (HUMINT). The conduct of HUMINT collection, analysis, and reporting must be optimized to gain access and insights into some of the most difficult "targets," such as terrorist cells, hard and deeply buried targets, closed regimes, and WMD development and deployment plans. The United States needs to enhance HUMINT capabilities and tools not only to gather better intelligence but also to gain the synergy of technical collection systems through better positioning. Finally,

HUMINT reporting must be integrated into the situational awareness display that provides joint forces with battlespace visualization.

- **Emerging Technologies:** The Department will vigorously pursue the development and exploitation of technologies that can significantly increase the U.S. advantage in intelligence collection, analysis, and security. Some of the most promising follow:
 - Low-observable technologies that may be applied to collection platforms
 - Nanotechnology that may result in miniature, mobile, autonomous sensors capable of penetrating the secure and remote facilities of an adversary
 - Ubiquitous, networked sensors providing friendly forces with a continuous, highly accurate, real-time display of the enemy throughout the battlespace
 - Advanced parallel processing and quantum computing to provide real-time processes, decryption, translation, and transcription of communications
 - Biometrics for tracking adversaries and providing secure authentication of individuals seeking network or facility access
 - Commercial imagery for remote sensing of the earth.

Intelligence, Surveillance, and Reconnaissance: The Department is pursuing investment strategies and migration plans for an integrated, cost-effective mix of unmanned aerial vehicles (UAVs), manned platforms, and spaceborne, maritime, and terrestrial systems responsive to future collection needs and challenges. As these strategies and plans are developed, the horizontal integration of intelligence and surveillance content and processes is needed along with the indicated policy and organizational changes. Efforts are underway to accelerate the procurement of additional UAV platforms and sensors. Enhanced space-based radar systems are also required to provide global, long-range, ground moving target indicator capability to augment existing airborne capabilities. Commercial systems, especially satellite imagery, are being integrated into U.S. government ISR capabilities.

- **Sensors:** A wide range of imagery intelligence (IMINT), signals intelligence (SIGINT), and measurement and signature intelligence (MASINT) sensors are needed to respond to cur-



rent and future requirements. Satellite IMINT sensors need to provide long-dwell capabilities. SIGINT payloads are needed for UAVs as well as for specialized shipboard collection sensors to capture radio frequency signals emanating from state and non-state threats. Extensive airborne SIGINT modernization efforts are needed to provide low- and high-band collection capabilities that elude currently deployed systems. MASINT's multi-disciplinary scope offers great potential. MASINT sensor development and deployment, particularly for such purposes as sampling for agents and collection against hard and deeply buried targets, is critical to maintaining U.S. military advantages.

- **Collaborative Intelligence, Surveillance, and Reconnaissance Operations:** The ISR community must move toward a collaborative enterprise to achieve more responsive support for civilian decision-makers and commanders engaged in planning and executing operations. Collaborative capabilities are needed to permit agile and adaptive strategies, plans, and operations, as well as rapid sharing of analysis and time-sensitive information. A fused information picture must provide decision-makers and commanders with a near-real-time capability to support operations and visualize the operational space. Decision aids and other tools are needed to enable decision-makers to develop a coherent strategy and plan and to adjust rapidly to emerging situations. Such systems are essential to establishing an effective, efficient, and responsive ISR posture in joint and combined operations.
- **Task, Post, Process, and Use:** The rapid tempo and agility of future military operations will require innovative information handling approaches that more effectively integrate all collection disciplines (e.g., IMINT, SIGINT, MASINT, HUMINT, and open sources) and enable immediate and simultaneous access to information by a variety of users. The traditional sequential model (task, collect, process exploit/analyze, disseminate) is being supplemented by an information-handling concept for NCW expressed by the functions: "task, post, process, and use (TPPU)." Immediate, simultaneous, and integrated intelligence processes must accommodate new types of readily available multimedia, multi-spectral, and multi-source information.

Pillar Three: Concept Development and Experimentation

Pillar Three involves experimentation with new approaches to warfare, operational concepts and capabilities, and organizational constructs (e.g., the U.S. Army's Interim Brigade Combat Team) through war gaming, simulations, and field exercises focused on emerging challenges and opportunities.

Concept development and experimentation go hand-in-hand. Experiments designed to evaluate new concepts provide results that help refine those concepts in an iterative fashion. The spiral experimentation process features the use of joint limited objective experiments (LOEs) networked among all of the combatant commanders. The Department expects to have multiple joint and Service concept development efforts underway, conducted by the combatant commands and the Services to ensure the robust competition of ideas. The *Transformation Planning Guidance (TPG)* provides detailed joint concept development and experimentation guidance.

Joint Concept Development and Experimentation Criteria: The Director of the Office of Force Transformation (OFT) has published criteria for successful experimentation programs. These criteria address the following areas:

- Scientific method and its role in the U.S. Armed Forces achieving competitive advantage
- Experimentation in exercises and operations and considerations for design, data collection, analysis, and sharing results
- Experimentation with virtual capabilities and threats to explore mid- and far-term transformational possibilities
- Experimentation with prototypes that allow co-evolution of concepts, technologies, processes, and organizations
- Experimentation with aggressive threats that include asymmetric capabilities and the possibility of technological breakthroughs and that span a variety of environments
- Use of red teams operating at the tactical, operational, and strategic levels
- Establishment of procedures and repositories for capturing and sharing lessons learned.

Service Role in Experimentation: Service-led experimentation efforts should be consistent with

each Service's transformation roadmap and joint experimentation efforts by JFCOM and other JFCs. Components are working with JFCOM on developing joint experimentation that assigns highest priority to generating the following results:

- Fast-deploying joint C2 structures that exploit global information access to distributed, non-deploying centers of information worldwide and that better enable the synchronized and synergistic employment of forces provided by the Services
- Tools enabling the timely correlation and dissemination of mission-specific information to commanders at all levels
- Tools enabling the closer integration of ISR efforts and their output
- Joint capabilities enabling the near-simultaneous deployment, synergistic employment and sustainment of air, land, sea, and space warfighting capabilities
- Resource reallocation recommendations aimed at overcoming low-density/high-demand constraints
- Improvements to joint operations in urban terrain and jungle environments, with special emphasis on LOEs in urban C4ISR.

Supporting Infrastructure: Vigorous and dynamic concept development and experimentation will need to be supported by a dedicated infrastructure. This infrastructure includes the following elements:

- **War Gaming:** War games can help Services and agencies develop and evaluate future concepts. Services and agencies can combine near-, mid- or long-term capabilities and concepts with each other's, as well as the joint community's, to examine key ideas and identify conceptual gaps or flaws. War gaming can also take place in a distributed fashion, thus drawing upon all Services and agencies as appropriate. The results can be analyzed for continued development and refinement of the future concepts.
- **Modeling and Simulation:** A new generation of modeling and simulation (M&S) is needed to support concept development. M&S should promote experimentation and training by linking many types of simulations, from aggregate and detailed computer models, to simulators and man-in-the-loop hardware components.
- **Joint National Training Capability:** The Joint National Training Capability (JNTC) will provide a real-world laboratory with the capability to conduct experiments that assess new doctrine, tactics, tech-

niques, and procedures using live military forces against professional opposing forces in realistic combat conditions. Lessons learned from the JNTC's exercises and experiments will be a principal source of insight for generating new operating concepts.

- **Operational Lessons Learned:** Lessons learned from operational missions should be systematically captured, analyzed, and incorporated into ongoing experimentation and concept development. These actions will allow the Department to test new tactics, techniques, and procedures by introducing them into an experimental environment to determine whether they are worthy of consideration in operating concepts. Proven results can then be institutionalized within the forces.

Pillar Four: Developing Transformational Capabilities

The Department requires strong mechanisms for implementing results from concept development and experimentation, and more immediately, for developing the capabilities needed to meet the six operational goals of transformation. To accomplish these operational goals, and more broadly develop the capabilities necessary for achieving future operating concepts, the Department must develop actionable transformation roadmaps, promote rapid and innovative Research, Development, Test, and Evaluation (RDT&E) alternatives, and transform joint training and education. It must also continue to make organizational changes, as appropriate, within the combatant commands and other military organizations.

Developing Actionable Transformation Roadmaps: The initial Service and agency transformation roadmap efforts established a baseline assessment across the Department's transformational activities. The next set of roadmaps will address capabilities and associated metrics to address progress toward the six transformational goals and the JOCs. In addition, the Service roadmaps will provide a plan for building the capabilities necessary to support the JOCs. Similarly, the joint roadmap developed by JFCOM with input from the defense agencies will provide a plan for building joint capabilities in support of the JOCs. Guidance for the development of transformation roadmaps is provided in Appendix Three of the TPG.

Rapid RDT&E Programs: The transformation roadmaps serve as baseline plans for achieving the desired JOCs. However, it is possible that the roadmaps may not be fully executed due to competing priorities elsewhere in



the defense program. To ensure execution of critical roadmap areas, or to stimulate alternative ways to more efficiently and effectively achieve desired capabilities, perhaps at higher technical risks, the Department is initiating the following RDT&E programs with substantially greater flexibility and rapidity:

- **Transformation Initiatives Program:** One of the keys to achieving the Department's transformational goals is the involvement of combatant command commanders in the experimentation process in operational environments. Consequently, the Transformation Initiatives Program (TIP) is being developed by the Director, ODT, to enable these commanders to implement unprogrammed transformation initiatives that support transformational opportunities. The TIP will enhance the combatant commanders' ability to pursue unforeseen but potentially high-payoff joint transformation initiatives. These initiatives are expected to be time-critical and present themselves as opportunities to co-evolve JOCs and technologies in contingencies, joint operations, exercises, and experiments.
- **Joint Rapid Acquisition Program:** Transformation of defense management includes the reduction of acquisition cycle time. The joint Rapid Acquisition Program (RAP) administered by JFCOM will accelerate the implementation and fielding of projects employing newly matured technologies to meet the immediate needs of the warfighter. Its purpose is to serve as a source of bridge funding to transition a program from the status of an ACTD, Advanced Technology Demonstration (ATD), or experimental prototype into a program of record, funded by a component, combatant command, or defense agency.

Transformation of Training: The military advantages that U.S. forces enjoy today are due in large part to the way we train our forces. The rigorous and realistic training regimen that our military conducts provides our forces with extraordinary battlespace advantages. This training enables the warfighter to maximize the potential of technologically advanced platforms, thus widening the gap between the United States and its adversaries. For this advantage to persist into the future, the transformation of training must

parallel and be equally as robust as all other areas of the Department's transformational efforts. To this end, JFCOM is planning for the establishment of the new JNTC.

Transformation of Joint Education: Joint education is fundamental to creating a culture that supports transformation, founded on leaders who are joint by disposition and comfortable with change. This culture requires a fundamentally revised approach to joint professional military education. Joint education must prepare our leaders both to conduct operations as a coherently joint force and to think their way through uncertainty.

Transformation of Organizations: Organizational change is fundamental to transformation efforts. For example, recent changes in the missions and geographic areas of responsibility of selected combatant commands and the establishment of a new combatant command, have been an important, but sometimes overlooked, dimension of military transformation. During Fiscal Year 2002, these changes were highlighted by the new Unified Command Plan (UCP). They resulted from a careful consideration of new and emerging capabilities within the U.S. Armed Forces and the fast-changing strategic and operational environment within which they are operating:

- The U.S. Northern Command was established to defend the U.S. homeland and provide military assistance to civil authorities.
- JFCOM is to focus on transforming U.S. military forces. Its geographic responsibilities were shifted to the U.S. Northern Command and the U.S. European Command.
- The merging of the U.S. Space Command and the U.S. Strategic Command created an expanded U.S. Strategic Command; new missions (Global Strike, Missile Defense, Information Operations C4ISR) have been assigned to this command in addition to its traditional missions and responsibilities.
- The expansion of the U.S. Special Operations Command's role in the global war on terrorism, directed by the Secretary of Defense, is also part of this process.

We should expect organizational transformation to extend down through small unit levels.

THE EMERGING WAY OF WAR

“... we are entering a new era of military operations and capabilities. The very character of warfare is changing to account for the massive implications of the information age. It embodies the new decision logic with attributes we will become increasingly familiar with and comfortable. We can already see its effects in current operations. The last time we witnessed change of this magnitude was with the advent of the industrial age and the levée en masse (the mobilization of entire societies for war). Both of these events are rapidly receding into the past. A new American way of war has emerged – network-centric operations.”

*Vice Admiral (Ret.) Arthur K. Cebrowski,
Director, Force Transformation, Office of the Secretary of Defense,
“New Rules, New Era,” Defense News, October 21-27, 2002, page 28*

The emerging way of war is a unique approach to the conduct of joint warfare in the information age. Constructed around the fundamental tenets of network-centric warfare (NCW) and emphasizing high-quality shared awareness, dispersed forces, speed of command, and flexibility in planning and execution, it will result in U.S. forces conducting immensely powerful effects-based operations (EBO) to achieve strategic, operational, and tactical objectives across the full range of military operations. Although the transformation of the U.S. Armed Forces is a continuing process, the recent performance of U.S. forces in the successful conduct of Operation Enduring Freedom and Operation Iraqi Freedom has provided a glimpse of the future potential of the emerging way of war.

The basic tenets of NCW, set forth in *Network Centric Warfare: Department of Defense Report to Congress* (July 27, 2001), are as follows:

- A robustly networked force improves information sharing.
- Information sharing enhances the quality of information and shared situational awareness.
- Shared situational awareness enables collaboration and self-synchronization and enhances sustainability and speed of command.
- These, in turn, dramatically increase mission effectiveness.

NCW, the key enabler of EBO and the emerging way of war, involves a new way of thinking about how the U.S. Armed Forces accomplish their missions and how they organize and inter-relate. It represents a powerful set of warfighting concepts and associated military capabilities that allow warfighters to take full advantage of all available information and bring all available assets to bear in a timely and flexible manner.

The transforming joint force—organized, trained, and equipped to conduct the emerging way of war—will be capable of achieving U.S. strategic and operational objectives more quickly while employing agile, more rapidly deployable forces. This force must be able to gain and maintain decision superiority, influence or rapidly alter the initial conditions, and conduct network-centric operations to resolve a crisis or decisively defeat any adversary.

The ongoing transformation of the U.S. Armed Forces is crucial to ensuring that our forces are capable of attaining the four major goals of the U.S. defense strategy: assuring allies and friends, dissuading future military competition, deterring threats and coercion against U.S. interests, and decisively defeating any adversary if deterrence fails.

Military Transformation and the Strategic Environment

Transforming defense—its role in national security, its management, and the force itself—is a national, corporate, and risk management strategy that responds to profound change in the strategic environment. As we move forward, we must understand how transformation addresses uncertainty. For many years, our strategic focus has been at the top: great power war in a global security environment where our security concerns were largely viewed through the lens of state-on-state conflict. Even as the threat of great power war diminished, we remained focused largely on conflict between nations with the threat recast as the “rogue state.” Meanwhile, sources of power, conflict, and violence continued to change and spread more broadly within the system.

Today, we find that power is moving to the larger system level, an international system evolving as a consequence of globalization, while violence is migrating downward to the level of individuals or



collections of individuals. To be sure, state-on-state conflict is by no means obsolete, nor is it likely to become so. As illustrated by North Korea, Iran, and others, the potent threat posed by “rogue states” armed with weapons of mass destruction (WMD) remains. At the same time, new threats are emerging from societies and people who remain disconnected from the larger evolving global system. These threats have the potential to create severe perturbations to the international system, and the resulting shockwaves cross all economic sectors and social boundaries as they propagate around the world.

On September 11th, 2001, we witnessed this phenomenon. We were not attacked by a nation or by an army; we were attacked by a group of individuals who were willing to die for their cause and could not be deterred. As the consequences of this systemic change become more apparent, we are discovering that our force capabilities are out of balance with emerging realities. We are just now readjusting our security perspectives in light of this altered system; a strategy that emerges is transformation.

The magnitude and pace of change in the strategic environment compel a transformation of the U.S. military, as well as the organizations and processes by which it is controlled, supported, and sustained. And although we might point to a beginning of transformation, we should not and cannot foresee the end. President George W. Bush’s mandate for military transformation was “to challenge the status quo and envision a new architecture of American defense for decades to come.” Both he and Secretary Rumsfeld view transformation as a continuing process that not only anticipates the future but also seeks to create that future. It does so, in part, by co-evolving technology, organizations, and processes. However, transformation begins and ends with culture.

Transformation is first and foremost about changing culture. In turn, culture is about behavior—about people, their attitudes, their values, and their beliefs. What we believe, what we value, and our attitudes about the future are ultimately reflected in our actions, in our strategies and processes, and the decisions that emerge from them. The Department’s strategy for transformation understands this; its actions reflect that understanding.

“We must transform not only our armed forces, but also the Department that serves them by encouraging a culture of creativity and intelligent risk taking. We must promote a more entrepreneurial approach to developing military capabilities, one that encourages people, all people, to be proactive and not reactive, to behave somewhat less like bureaucrats and more like venture capitalists; one that does not wait for threats to emerge and be ‘validated,’ but rather anticipates them before they emerge and develops new capabilities that can dissuade and deter those nascent threats.”

*Secretary of Defense Donald Rumsfeld,
at the National Defense University,
January 31, 2002*

The Department of Defense’s *Transformation Planning Guidance (TPG)*, approved by the Secretary of Defense in April 2003, provides a clear, concise plan for implementing the Department’s force transformation strategy. It identifies the critical elements of force transformation and assigns roles and responsibilities for actions toward that end. At the same time, the *Joint Operations Concepts (JOpsC)*, developed by the Chairman of the Joint Chiefs of Staff (CJCS) in coordination with the Commander, Joint Forces Command (JFCOM), provides the overarching template for future joint operations. Together, the *TPG* and the *JOpsC* reflect a capabilities-based approach that focuses on how the United States can defeat a broad array of capabilities that any potential adversary may employ rather than who the adversaries are and where they might engage the U.S. Armed Forces or threaten U.S. interests. These two key documents are consistent with the transformation vision outlined in the President’s remarks and continue the process of building and articulating the emerging way of war that began with the 2001 Quadrennial Defense Review (QDR).

Deter Forward – A Concept for Prevention

When Secretary Rumsfeld signed the *QDR Report* in September 2001, he created the vision for transformation. The six operational goals and the four pillars of transformation, addressed in the preceding chapters, have received the most attention. However,

one of the most powerful concepts in the *QDR Report*, and one that has received the least scrutiny, is the concept of “deter forward.”

Deter forward is profoundly important because it forces us to change the way we think about force capabilities and disposition. The capability of U.S. forces to take action from a forward area, to be reinforced rapidly from other areas, and to defeat adversaries swiftly and decisively will contribute significantly to our ability to manage the future strategic environment. Consider for a moment the implications of deterring and defeating an enemy with minimal reinforcements. In peacetime, we assure allies, we dissuade competition, and we deter hostile acts. If it becomes necessary to compel resolution with military force, we bring forces to bear. Assuming we continue to use classic industrial age thinking, we vary the speed of force deployment and the type and volume of capabilities brought to bear according to the degree of risk we are willing to accept. The equation is, in effect, that if we cannot respond quickly, then we simply get there with more massive force than our adversary, ultimately overwhelming him. But this approach is doomed to failure in the information age.

In the information age, because of the enormous leverage that information technology (IT) provides across all warfighting functions, armed conflict is increasingly path dependent: small changes in the initial conditions result in enormous changes in outcome. Thus, speed becomes a more valuable characteristic of the entire force because the ability to decide and act faster than our opponent allows us to define or alter the initial conditions on terms favorable to our interests. The goal is to develop a dynamic situation, and in particular, one that is changing at a higher rate of speed than an adversary can keep pace with, while at the same time sharply narrowing the adversary's strategic options. Only certain kinds of forces are going to be able to do that: forces oriented around speed. This is not so much speed of response as it is speed within the response: speed of deployment, speed of organization, speed of employment, and speed of sustainment. In other words, we may choose our punches with great care (strategy), only to unleash them with blinding speed (operations, tactics). Networking is the key enabler of the battlespace transparency necessary for that speed.

As illustrated in **Figure 9**, a joint force will achieve its strategic and/or operational objectives

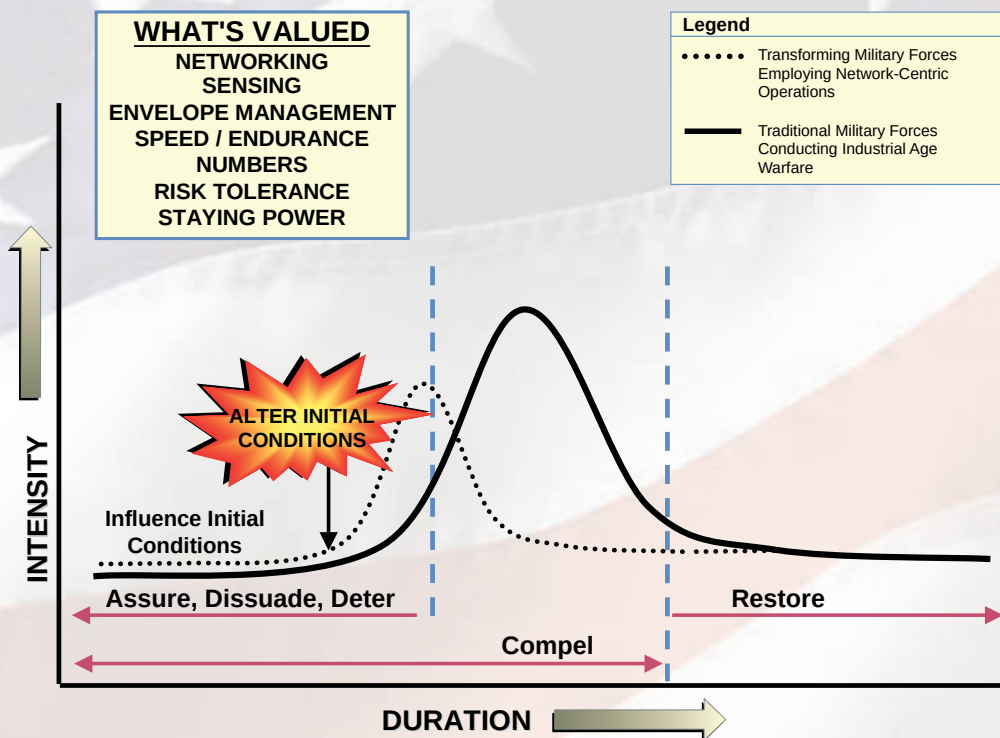


Figure 9. Deter Forward, Alter the Initial Conditions



more quickly as an agile, rapidly deployable force that can quickly alter initial conditions in its favor. Traditionally, the effectiveness of an industrial age military force has been measured by its ability to use its mass to generate and sustain a peak of intensity over time. Although that ability remains important in struggles between industrial age organizations, it is immaterial if an information age opponent is able to seize the initiative and alter initial conditions. Recent operational experience has repeatedly reinforced the lesson that only forces that are truly joint, with comprehensively integrated capabilities and operating according to the principles of NCW, can fully exploit the highly path-dependent nature of modern conflict. They do so by altering initial conditions, developing and sustaining high rates of change, and repeatedly creating new operational realities which progressively “lock out” an opponent’s ability to cope effectively. These joint forces retain the ability to generate great intensity, but because its onset is more abrupt, this intensity is far more difficult to counter.

Governing Principles of a Network-Centric Force

Network-centric organizations and an understanding of the governing principles of NCW are required for effective “deterrence forward” forces capable of conducting EBO. NCW is not just dependent on technology per se; it is also a function of behavior. Fundamentally, it is about how wars are fought and how warfighting power is developed. During the industrial age, power came from mass. Increasingly, power tends to come from information, access, and speed. NCW will capitalize on capabilities for greater collaboration and coordination in real time, the results of which are greater speed of command, greater self-synchronization, and greater precision of desired effects. It will enable the merging of our current warfighting capabilities into a seamless, joint force that is highly agile and capable of locking out its opponent’s ability to respond to high rates of change.

The U.S. Armed Forces have already accumulated compelling evidence from simulation, experimentation, and real-world experience that substantiates the power of network behavior. Many think of “the network” as a noun, in other words, a “thing.” They may not realize that “to network” is also a verb, a human behavior. So when we shift from being platform-centric to network-centric, we shift from focus-

ing on things to focusing on behaviors or actions. That is where we find the power. The ongoing shift from platform-centric to network-centric thinking is a key to transformation and the emerging way of war.

Some governing principles for a network-centric force, also referred to as terms of reference, have been identified, as shown in **Figure 10**. In effect, these terms of reference constitute the new rules of warfare in the information age. They are guiding the development of the *JOpsC*.

Fight First for Information Superiority: Generate and exploit high-quality shared awareness through better timeliness, accuracy, and relevance of information:

- Increase an enemy’s information needs and reduce his ability to access information.
- Assure our own information access through a well-networked and interoperable force.

High-Quality Shared Awareness: Routinely translate information and knowledge into the requisite level of common understanding and situational awareness across the spectrum of participants in joint operations:

- Build a collaborative network of networks, populated and refreshed with quality intelligence and non-intelligence data, both raw and processed, to enable forces to build a shared awareness relevant to their needs.
- Information users must also become information suppliers, responsible for posting information before use.
- High-quality shared awareness requires secure and assured networks and information that can be defended.

Dynamic Self-Synchronization: Increase the freedom of low-level forces to operate nearly autonomously and to re-task themselves through exploitation of shared awareness and the commander’s intent:

- Increase the value of subordinate initiative to produce a meaningful increase in operational tempo and responsiveness.
- Rapidly adapt when important developments occur in the battlespace, and eliminate the step function character of traditional military operations.

Dispersed Forces: Move combat power from the linear battlespace to non-contiguous operations:

- Emphasize functional control versus physical occupation of the battlespace and generate effective combat power at the proper time and place.
- Increase close coupling of intelligence, operations, and logistics to achieve precise effects and gain temporal advantage with dispersed forces.

De-massed Forces: Move from an approach based on geographically contiguous massing of forces to one based upon achieving effects:

- Substitute information and effects for mass to limit the need to concentrate physical forces within a specific geographical location.
- Increase the tempo and speed of movement throughout the battlespace to complicate an opponent's targeting problem.

Deep Sensor Reach: Expand the use of deployable, distributed, and networked sensors, both distant and proximate, that detect actionable information on items of interest at operationally relevant ranges to achieve decisive effects:

- Leverage increasingly persistent intelligence, surveillance, and reconnaissance (ISR).
- Use sensors as a maneuver element to gain and maintain information superiority.
- Exploit sensors as a deterrent when employed visibly as part of an overt display of intent.

Compressed Operations and Levels of War: Eliminate procedural boundaries between Services and within processes so that joint operations are conducted at the lowest organizational levels possible to achieve rapid and decisive effects:

- Increase the convergence in speed of deployment, speed of employment, and speed of sustainment.
- Eliminate "firewalls" between processes (e.g., organize, deploy, employ, sustain), operations, intelligence, and logistics.
- Eliminate structural boundaries to merge capabilities at the lowest possible organizational levels (e.g., joint operations at the company/sub-squadron/task unit level).

The New Rules

- Fight first for *information superiority*
- Access to information – *shared awareness*
- Dynamic *self-synchronization*
- *Dispersed forces* – noncontiguous operations
- *De-massed forces*
- *Deep sensor reach*
- *Compressed operations* and levels of war
- *Speed* of command
- *Alter* initial conditions at increased rates of change

NETWORK-CENTRIC WARFARE

HIGH RATES OF CHANGE
CLOSELY COUPLED EVENTS
LOCK IN/OUT
SPEED OF COMMAND
SELF SYNCHRONIZATION

WHAT'S VALUED

NETWORKING
SENSING
ENVELOPE MANAGEMENT
SPEED/ENDURANCE
NUMBERS
RISK TOLERANCE
STAYING POWER

Figure 10. New Rules of Information Age Warfare

Rapid Speed of Command: Create an information advantage and convert it into a competitive advantage by creating processes and procedures otherwise impossible within prudent risk:

- Through battlefield innovation and adaptation, compress sensor-to-decision-maker-to-shooter timelines to turn information advantage into decision superiority and decisive effects.
- Progressively lock out an adversary's options, and ultimately achieve option dominance.

Alter Initial Conditions at Increased Rates of Change: Exploit the principles of high-quality shared awareness, dynamic self-synchronization, dispersed and de-massed forces, deep sensor reach, compressed operations and levels of war, and rapid speed of command to enable the joint force, across the cognitive, information, and physical domains of warfare, to swiftly identify, adapt to, and change an opponent's operating context to our advantage.

Network-Centric Operations and the Domains of Conflict

The *JOpsC* and its subordinate Joint Operating Concepts (JOCs), architectures, requirements, and capabilities will encapsulate the vision of a transforming network-centric joint force and a capabilities-based defense strategy designed to attain the six operational goals established by the Secretary of

Defense. Additionally, the *JOpsC* will be expressed in terms of the physical, information, and cognitive domains of warfare. The required attributes and capabilities of a new joint force capable of conducting network-centric operations must be carefully considered for each of these three domains:

- **Physical Domain:** The physical domain is the traditional domain of warfare where force is moved through time and space. It spans the land, sea, air, and space environments where military forces execute the range of military operations and where the physical platforms and communications networks that connect them reside. Comparatively, the elements of this domain are the easiest to measure, and consequently, combat power has traditionally been measured in the physical domain.
- **Information Domain:** The information domain is the domain where information is created, manipulated, and shared. It is the domain that facilitates the communication of information among warfighters. It is where command and control (C2) of military forces is communicated and the commander's intent is conveyed. Consequently, it is increasingly the information domain that must be protected and defended to

enable a force to generate combat power in the face of offensive actions by an adversary. Finally, in the all-important battle for information superiority, the information domain is ground zero.

- **Cognitive Domain:** The cognitive domain is in the mind of the warfighter. This is the realm of EBO. Battles, campaigns, and wars are won in this domain. The intangibles of leadership, morale, unit cohesion, level of training and experience, and situational awareness are elements of this domain. This is the domain where a commander's intent, doctrine, tactics, techniques, and procedures reside. This is also where decisive battlefield concepts and tactics emerge.

As illustrated in **Figure 11**, the domain intersections represent important, dynamic areas within which concept-focused experimentation should be conducted. The precision force so vital to the conduct of successful joint operations is created at the intersection of the information and physical domains. Shared awareness and tactical innovation occur at the intersection between the information and cognitive domains. Because many battles and campaigns are actually won or lost in the cognitive domain, this intersection is enormously important. The intersection between the physical and cognitive

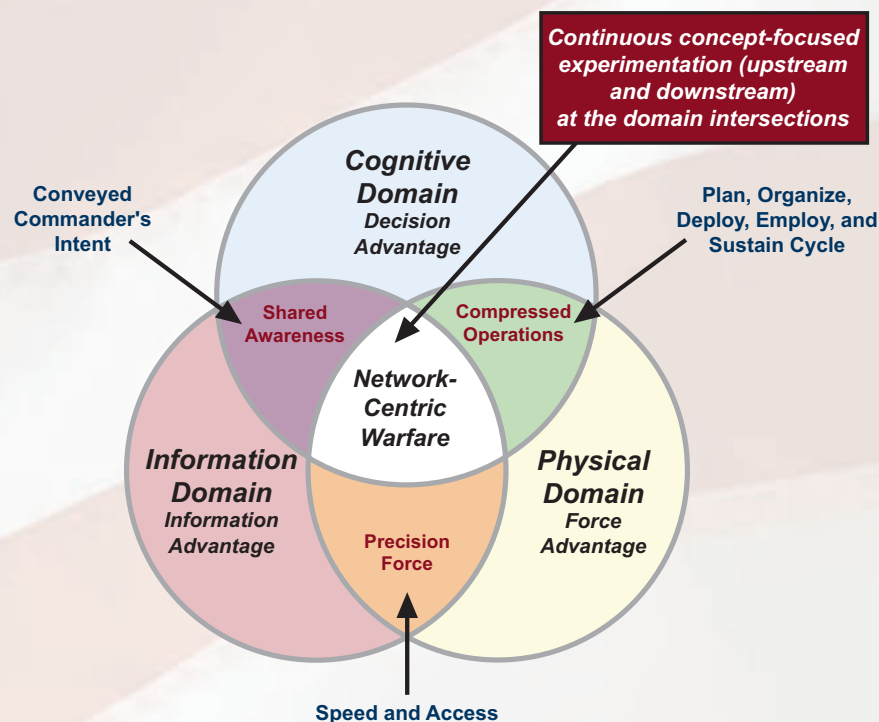
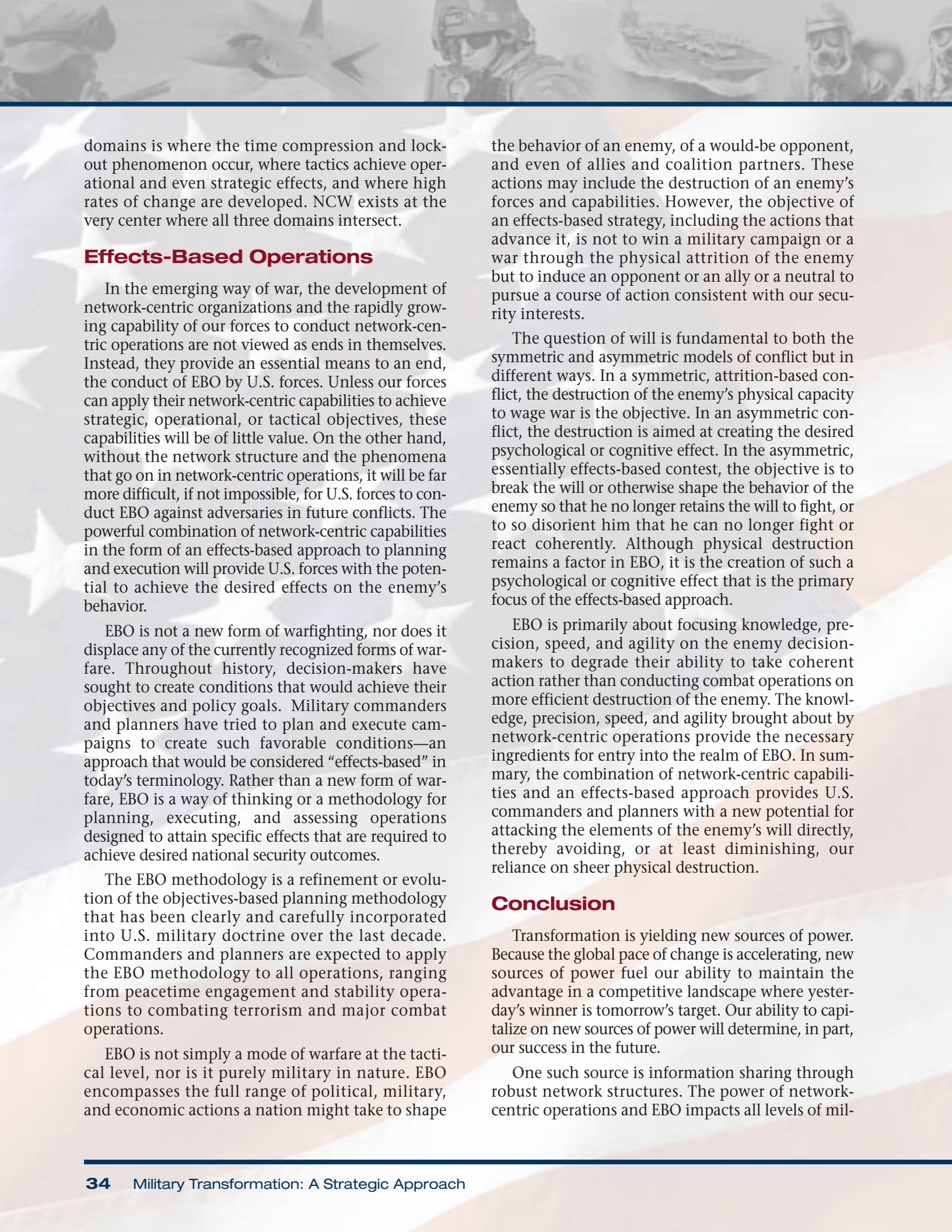


Figure 11. Information Age Warfare . . . Domains of Conflict



domains is where the time compression and lock-out phenomenon occur, where tactics achieve operational and even strategic effects, and where high rates of change are developed. NCW exists at the very center where all three domains intersect.

Effects-Based Operations

In the emerging way of war, the development of network-centric organizations and the rapidly growing capability of our forces to conduct network-centric operations are not viewed as ends in themselves. Instead, they provide an essential means to an end, the conduct of EBO by U.S. forces. Unless our forces can apply their network-centric capabilities to achieve strategic, operational, or tactical objectives, these capabilities will be of little value. On the other hand, without the network structure and the phenomena that go on in network-centric operations, it will be far more difficult, if not impossible, for U.S. forces to conduct EBO against adversaries in future conflicts. The powerful combination of network-centric capabilities in the form of an effects-based approach to planning and execution will provide U.S. forces with the potential to achieve the desired effects on the enemy's behavior.

EBO is not a new form of warfighting, nor does it displace any of the currently recognized forms of warfare. Throughout history, decision-makers have sought to create conditions that would achieve their objectives and policy goals. Military commanders and planners have tried to plan and execute campaigns to create such favorable conditions—an approach that would be considered “effects-based” in today's terminology. Rather than a new form of warfare, EBO is a way of thinking or a methodology for planning, executing, and assessing operations designed to attain specific effects that are required to achieve desired national security outcomes.

The EBO methodology is a refinement or evolution of the objectives-based planning methodology that has been clearly and carefully incorporated into U.S. military doctrine over the last decade. Commanders and planners are expected to apply the EBO methodology to all operations, ranging from peacetime engagement and stability operations to combating terrorism and major combat operations.

EBO is not simply a mode of warfare at the tactical level, nor is it purely military in nature. EBO encompasses the full range of political, military, and economic actions a nation might take to shape

the behavior of an enemy, of a would-be opponent, and even of allies and coalition partners. These actions may include the destruction of an enemy's forces and capabilities. However, the objective of an effects-based strategy, including the actions that advance it, is not to win a military campaign or a war through the physical attrition of the enemy but to induce an opponent or an ally or a neutral to pursue a course of action consistent with our security interests.

The question of will is fundamental to both the symmetric and asymmetric models of conflict but in different ways. In a symmetric, attrition-based conflict, the destruction of the enemy's physical capacity to wage war is the objective. In an asymmetric conflict, the destruction is aimed at creating the desired psychological or cognitive effect. In the asymmetric, essentially effects-based contest, the objective is to break the will or otherwise shape the behavior of the enemy so that he no longer retains the will to fight, or to so disorient him that he can no longer fight or react coherently. Although physical destruction remains a factor in EBO, it is the creation of such a psychological or cognitive effect that is the primary focus of the effects-based approach.

EBO is primarily about focusing knowledge, precision, speed, and agility on the enemy decision-makers to degrade their ability to take coherent action rather than conducting combat operations on more efficient destruction of the enemy. The knowledge, precision, speed, and agility brought about by network-centric operations provide the necessary ingredients for entry into the realm of EBO. In summary, the combination of network-centric capabilities and an effects-based approach provides U.S. commanders and planners with a new potential for attacking the elements of the enemy's will directly, thereby avoiding, or at least diminishing, our reliance on sheer physical destruction.

Conclusion

Transformation is yielding new sources of power. Because the global pace of change is accelerating, new sources of power fuel our ability to maintain the advantage in a competitive landscape where yesterday's winner is tomorrow's target. Our ability to capitalize on new sources of power will determine, in part, our success in the future.

One such source is information sharing through robust network structures. The power of network-centric operations and EBO impacts all levels of mil-



itary operations from the tactical to the strategic. Although the order of magnitude changes that occur as a consequence of network activity may seem somewhat abstract when compared with traditional industrial age measures of effectiveness, they are nevertheless quite real. The construct of an information advantage may seem somewhat intangible, but it can be measured and its impact on military operations can be evaluated in terms of lethality, survivability, and ultimately, mission effectiveness—coins of the realm valued by warfighters across the ages.

When one considers the core logic of transformation in light of the emerging international security environment, it becomes clear that even as homeland security remains our principal national security objective, the preferred U.S. military strategic method is the projection of power overseas and deterrence of potential adversaries forward. As a matter of effectiveness, cost, and moral preference, operations will have to shift from being reactive (i.e., retaliatory and punitive) to being largely preventative or even, in certain situations, preemptive.

The implications of “deter forward” necessitate a major force posture review, rebalancing from the current condition where more than 80 percent of the force is U.S.-based and virtually all of the CONUS-based Army, Air Force, and Marine Corps units and several key capability sets of the Navy are competing for access to the same finite strategic lift. Ultimately, a balance must be achieved among strategic deployment from home, forces forward, and reliance on allies. Accordingly, the emerging way of war, as developed by the U.S. Armed Forces, will feature the following:

- Increased focus on highly networked, small, but broadly skilled and highly trained units whose extensive local knowledge and easier insertion give them greater power and utility than other formations deploying from remote locations
- Expeditionary character: forces that are rapidly deployable and capable of overcoming anti-access or area-denial environments with seamless transitions from “deployment” to “employment”
- Forces capable of applying information-age techniques and technologies to urban warfare in order to deny the enemy sanctuary
- Surveillance-oriented forces to counter WMD so that unambiguous warning will not come too late
- Joint concepts that extend down through the tactical level of war
- Interagency capabilities for nation building and constabulary operations, so that our forces do not get stuck in one place when they are needed in another
- Adjustments in force structure and posture in consideration of the growing homeland security roles of the Coast Guard, the National Guard, and the Reserves.

Adding these new capabilities to the U.S. military is not only a natural development but also a positive one. For it is the United States’ continued success in deterring global war and reducing the likelihood of state-on-state war that will allow us to begin tackling the far thornier issues of transnational threats and sub-national conflicts—the battlegrounds on which the global war on terrorism will ultimately be won.

“The gravest danger our nation faces lies at the crossroads of radicalism and technology. . . . We will cooperate with other nations to deny, contain, and curtail our enemies’ efforts to acquire dangerous technologies. And, as a matter of common sense and self-defense, America will act against such emerging threats before they are fully formed.”

*President George W. Bush,
National Security Strategy,
September 2002*



Cleared for public release by Department of Defense Directorate
for Freedom of Information and Security Review, 03-S-1851.

**Director, Force Transformation, Office of the Secretary of Defense,
1000 Defense Pentagon, Washington, DC 20301-1000
www.oft.osd.mil**

Date of Publication: Fall 2003

