Report of the

Defense Science Board Task Force

on

DoD WARFIGHTING TRANSFORMATION

September 1999

Office of The Under Secretary Of Defense
For Acquisition and Technology
Washington, D.C. 20301-3140

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MEMORANDUM FOR UNDER SECRETARY OF DEFENSE (ACQUISITION AND TECHNOLOGY)

SUBJECT: Report of the 1998 Defense Science Board (DSB) Task Force on DoD Warfighting Transformation

I am pleased to forward the final report of the 1999 DSB Task Force on DoD Warfighting Transformation. This effort, chaired by Dr. Ted Gold, was formed to examine the transformation activities underway within the Department of Defense. Specifically, they were tasked, in a relatively short period, to provide a comprehensive picture of transformation efforts that encompasses organizational responsibilities, processes, and products, and to identify both opportunities and challenges/obstacles as well as to recommend criteria to gauge progress.

The attached report outlines their findings and provides some very useful recommendations for facilitating the transformation of the DoD. As you will note in this final report, these recommendations are purposely directed at top leadership within the Department, i.e. the Secretary of Defense and the Chairman of the Joint Chiefs of Staff. This is necessary because as the respective Chief Executives of the Department, these two individuals are ultimately charged with directing this process and for ensuring its successful outcome.

I fully support the notion that true transformation is about a vision of the future which is sometimes very different then what is reflected in current plans and programs, and that for true transformation to occur in any organization, high level cover and support by its leaders are absolutely necessary.

I endorse all of the Task Force's recommendations and propose you review the Task Force Chairman's letter and report.

Craig I. Fields
Chairman

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AUG 3 1999

Dr. Craig I. Fields
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Dear Dr. Fields:

I am pleased to forward the final report of the Defense Science Board (DSB) Task Force on DoD Warfighting Transformation. The Task Force was charged to provide a picture of DoD's transformation efforts, identify obstacles and recommend ways to enhance the process.

In the context of this study, transformation means the pursuit of bold new ways of conducting military operations to meet new security challenges of the 21st century. Given the nature of the topic – transformation is not a subject that lends itself to tidy categorization – as well as the short time available, the picture we present is necessarily more impressionistic than photo-realistic.

What did we find? Many positive steps compared to just a few years ago. These include:

- Strong words – by the most senior leadership, in authoritative documents – calling for fundamental transformation in both military and business affairs.
- A bold military vision – *Joint Vision 2010* – influencing the thinking if not yet the allocation of resources within the Department.
- New concepts under development in all the Services, sharing common themes and starting to address new security challenges.
- Experimentation underway in all the Services and the beginnings of experimentation in the joint community.

However, other activities we deem necessary for the aggressive pursuit of transformation were not in evidence. These include:

- A comprehensive department wide strategy and roadmap to bring focus and discipline to transformation activities.
- Metrics to gauge progress and foster feedback.
- Robust processes to turn promising results of experiments rapidly into real capabilities.
- Enough dedicated people committed full time to implementing the Department's vision.

On a more subjective level we did not find a pervasive sense of urgency about transformation. It appears that transformation is widely viewed as merely an opportunity, not an imperative.

We offer several recommendations to foster transformation – all directed at the Secretary of Defense and Chairman, JCS.

- Create an explicit strategy and roadmap to bring focus and energy to transformation activities.
- Establish and use metrics to assess progress toward transformation. We suggest several.
- Strengthen the voice of the future joint force commander – in concept development, experimentation and resource allocation.
- Make leader development, both military and civilian, a major transformation – and experimentation – objective.
- Nurture a coalition of key stakeholders outside DoD to help sustain transformation efforts.
- Promulgate an overarching DoD vision that links the desired revolutions in military and business affairs and addresses coalition and interagency (as well as joint) operations.

While we do not recommend creating a transformation czar, there needs to be a cadre, committed to the Secretary's and Chairman's vision, to serve as a catalyst and to integrate transformation activities.

The Task Force was assisted by an uncommonly knowledgeable, responsive and involved group of government advisors. Their frankness and constructive approach were invaluable. I also want to acknowledge the substantive role of COL Chris Shepherd, the Task Force's Executive Secretary, and the efforts of the DSB office and the support staff.

Ted Gold

Ted Gold
Task Force Chairman

Atch: Final Report

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EXECUTIVE SUMMARY

The Defense Science Board (DSB) Warfighting Transformation Task Force was charged with reviewing the transformation activities underway in the Department of Defense (DoD) to:

- provide an independent, comprehensive picture of transformation efforts that encompasses processes, organizational responsibilities, and anticipated products;
- identify opportunities to enhance, as well as the obstacles to, transformation progress; and
- recommend criteria to gauge progress over the next several years.

Transformation efforts within DoD today involve an inevitable tension between dealing with today's problems and preparing for tomorrow's. But an even more formidable tension exists between alternative views of tomorrow's challenges and between competing approaches to address them. Transformation is about defining and implementing a vision of the future different from the one embedded, if only implicitly, in DoD's current plans and programs. Such a transformation requires powerful, high-level support to survive in today's resource-competitive environment.

The Task Force, in the short time available (about three months), focused on the military operations side of transformation, sometimes characterized by the term Revolution in Military Affairs (RMA). However, the transformation of the conduct of military affairs must be part and parcel of the transformation of the enterprise as a whole – including the way the Department establishes priorities, makes investments, acquires materiel, manages its infrastructure, trains, and recruits. In other words, the RMA must be complemented by a Revolution in Business Affairs (RBA). This linkage goes beyond viewing the RBA as a bill payer for the RMA. It must also make these processes more responsive and adaptive. (The Task Force did not have the time to review RBA-related activities, but it did maintain this larger perspective in developing its findings and recommendations.)

The rationale for aggressively exploring transformation is compelling: new geostrategic environment; revolutionary technologies – information, biotechnology – presaging profound societal change; commercialization and globalization. These factors should stimulate new military capabilities and change DoD behavior, not because the old behavior was wrong but because it will not meet the new challenges.

The need for transformation appears to be well recognized, and transformation themes are prominently featured in recent versions of key administration and DoD national security documents (including the *National Security Strategy of the United States* and the Secretary of Defense's 1999 *Annual Report*). These documents posit ambitious objectives – the fundamental transformation of US military forces, involving new doctrines, operational concepts, and organizational structures – and call for a Revolution in Business Affairs to help enable a Revolution in Military Affairs.

There is a bold military vision – *Joint Vision 2010* (*JV2010*) – that is proving its durability. It is influencing what the Services and joint organizations are thinking and saying, if not yet substantially affecting the allocation of resources. *JV2010* follow-up implementation has included Joint Staff initiatives and the assignment of US Atlantic Command (USACOM) to lead a new Joint Concept Development and Experimentation effort.

Recently initiated Service activities seem to be of high quality, with strong commitment and intelligent direction – a considerably more substantive list than the DSB found (or more accurately, did not find) just a few years ago. These activities involve advanced concept development and experimentation in all Services. For example:

- The Army has pioneered the "spiral development" – a long sought-after iterative approach to coevolve concepts, doctrine, organization, and training, as well as materiel improvements. The Army has also just recently added light and strike force elements to the experimentation program, which heretofore has focused almost exclusively on the improvement of heavier mechanized forces.

- The Marines have been especially aggressive in the development and experimentation of new concepts and appear to be establishing an environment that fosters innovation and discovery and pushes concepts to expose failures and vulnerabilities.

- The Navy has pushed the exploration of network-centric warfare, a powerful organizing concept for the development of new capabilities. It has also established the Warfare Development Center at the Naval War College, which includes the Maritime Battle Center.

- The Air Force has embarked on development and implementation of an Aerospace Expeditionary Force, a concept with the potential for far-reaching changes to future forces.

However, the Task Force was concerned by what it did not find.

1. It did not find a comprehensive DoD-wide strategy and roadmap, or the use of metrics to gauge progress. Thus, there is no clear way to determine whether the current activities are adequate in direction or pace. The Task Force cannot overstate the importance of metrics to help DoD leadership gauge progress toward transformation and make essential course corrections.

2. It did not find an explicit, overarching Department vision for transformation that goes beyond the military aspects of *JV2010* to tie together the revolutions in military and business affairs.

3. It did not find robust processes to rapidly implement the promising results of experiments. The absence of such processes will promote skepticism, cynicism, and the like – attitudes that tend to inhibit transformation. Specific concerns expressed to the Task Force include a lack of flexibility to reassess priorities and assign resources as staff learn from experiments, and implementation procedures more attuned to materiel changes than to changes in concepts, tactics, and organization.

4. It did not find a strong future joint voice, not just in terms of authority and power, but in terms of information, analysis, data, experimental results, and the like. The intent is not to supersede the Services' role. Rather, it is to bring to the table an informed and effective voice representing the ultimate customers – the future Commander-in-Chiefs (CINCs) and Joint Task Force (JTF) commanders.

5. Lastly, on a more subjective level, the Task Force did not find much sense of urgency. DoD may be underestimating the focus and effort needed for transformation. Transformation of military capabilities, and the concomitant transformation of an enterprise the size and complexity of DoD, is a formidable undertaking under any circumstances. This challenge is more difficult under the current Operations Tempo (OPTEMPO) (quite unlike the 1920s, a period often cited as a model for military innovation) and because of the common view that the US already has, far and away, the best military in the world. This view, while accurate, tends to foster complacency. The Task Force is also concerned about the current "zero-defects" culture that promotes timidity or showcasing rather than discovery, learning, tolerance for failure, and the other attributes essential for successful experimentation.

The Task Force offers a number of recommendations to address the gaps and foster transformation.

The most important recommendation to the Secretary of Defense (SecDef) and the Chairman of the Joint Chiefs of Staff (CJCS) is to provide a focus and a sense of urgency to the transformation effort. DoD leadership should:

- create a more explicit strategy and roadmap to guide transformation activities; and
- establish and use metrics to assess progress toward transformation.

In addition, the Task Force recommends that the SecDef and CJCS:

- strengthen the future joint voice – in capability identification, concept development, experimentation, and resource allocation;
- make leader development, military and civilian, a major transformation objective; and
- nurture a guiding coalition to help sustain transformation efforts.

The Task Force also strongly recommends that the Secretary of Defense promulgate an overarching vision of the transformation of DoD. This vision should:

- encompass *JV2010's* military dimensions, tie together the sought-after revolutions in military and business affairs, and address the coalition dimension of future military operations.

The Task Force does not recommend a transformation czar. Transformation is a CEO's game and overall responsibility cannot be delegated. However, some organizational construct needs to be empowered to achieve measurable objectives. Fundamental transformation of US military capabilities will not be achieved with part-time oversight. There needs to be a cadre of DoD staff, committed to the SecDef's and CJCS's vision, who can serve as catalysts and integrators for all transformation activities (Service, joint, interagency, and coalition), particularly as they relate to implementation.

INTRODUCTION

Charge to the Task Force

Review transformation activities underway in DoD

- provide an independent, comprehensive picture of transformation efforts that encompasses organizational responsibilities, processes, and anticipated products
- identify challenges/obstacles to transformation and opportunities to enhance progress
- recommend criteria to gauge progress over the next several years

Charge to the Task Force

In an elaboration of the above tasks, the Task Force's Terms of Reference (TOR) asked that the review encompass "processes and organizations involved in generating requirements, developing doctrine, pursuing innovation and experimentation, and conducting training." The full TOR is shown in Appendix A, while the Task Force membership and a list of people (both inside and outside DoD) who met with members of the Task Force are presented in Appendix B and Appendix C, respectively. The Task Force and its TOR were motivated by Congressional language in Public Law 106-61 (Sec 903), shown in Appendix D, which requested that the Secretary of Defense "establish a task force of the Defense Science Board (DSB) to examine how the Department of Defense is preparing for a transformation in the conduct of military affairs."

The Task Force acknowledges at the outset that the goal of providing a comprehensive picture of transformation activities was beyond its grasp. DoD is too vast and too decentralized, and there is too much going on that is potentially relevant to transformation to capture within the short time (three months) allowed for this study. However, while falling short of comprehensiveness, the Task Force did strive to present a coherent picture that illuminates the major elements of transformation.

After this brief introductory section, the report describes what the Task Force found, offers the Task Force's concerns about what it did not find, and makes some observations about the transformation process as a whole. The report concludes with several recommendations to foster transformation.

What is Transformation?

- **Transformation is a process that seeks fundamental change in how an enterprise conducts its business.**
- **The focus of this report is the transformation of the conduct of US military operations, including operations other than war.**
- **The intent of this transformation is to foster discontinuous change in the nation's capabilities to conduct such operations -- one or more revolutions in military affairs (RMAs).**
- **A revolution in military affairs requires a simultaneous revolution in business affairs.**

Transformation

Transformation is an ambiguous term. It raises questions such as transformation of what? by whom? how fast? how much?

In the context of this study, transformation refers to change that is:

- ❒ focused on military operations,
- ❒ self-inflicted (managed by the organization itself), and
- ❒ aimed toward very big change – sometimes characterized by the term Revolution in Military Affairs (RMA).

However, there are other transformations, either envisioned or underway, directed at the way DoD establishes priorities, pursues technology, makes investments, acquires materiel, manages its infrastructure, recruits and trains civilian personnel, and so on. The sought-after changes in many of these areas are frequently characterized by the term Revolution in Business Affairs (RBA). The transformation of the conduct of military affairs must be part and parcel of a larger transformation of the enterprise as a whole and must not view the RBA simply as a bill payer for the RMA. The Task Force did not have the time to address and review RBA-related activities, but it did try to maintain this larger perspective and embed in its findings and recommendations the pursuit of RMAs in the context of this larger transformation.

There Have Been Recent Calls For Revolutions

- **"The military challenges of the 21st century ... require a fundamental transformation of our military forces"**
- **"We must transform our forces by exploiting the Revolution in Military Affairs (RMA)"**
- **Pursuit of the RMA involves ... "fundamental change in the capabilities of the armed forces, including new doctrines, operational concepts, and organizational structures"**
- **"...also requires fundamental reengineering of our infrastructure and streamlining of our support structures through the Revolution in Business Affairs (RBA)"**
- **"The RMA and RBA are interlocking revolutions" ... both needed to "ensure that US forces continue to have unchallenged superiority in the 21st century"**

It may surprise some to know that the above calls for fundamental change are not taken from reports by advisory bodies or commissions, but rather from recent administration and DoD documents – specifically, the *1998 National Security Strategy of the United States* and the *1999 Secretary of Defense's Annual Report to the President and Congress*. These and other recent documents (including the *National Military Strategy of the United States*, *Quadrennial Defense Review*, *Joint Vision 2010*, *Defense Planning Guidance*, and *Annual Service Posture Statements*) posit ambitious objectives – including new doctrines, operational concepts, and organizational structures. Moreover, these documents identify a linkage between revolutions in military and business affairs.

While such official exhortations are hardly sufficient for transformation – bureaucracies are skillful at re-labeling activities to fit rhetoric from on-high – these statements are a necessary and important step.

The US military is preeminent. Why aggressively explore transformation?

- **New geostrategic environment.**
  - new relationships, threats, and missions, as well as asymmetric vulnerabilities
- **Gaps in capability, such as rapid, decisive combined-force projection.**
- **Technology revolutions -- information, biotech -- which are driving profound societal change on global scale.**
- **Commercialization and globalization of militarily relevant technological and industrial bases.**
- **Continued pressure on resources (people & dollars), requiring DoD to do things smarter.**
- **Implementation time -- transformation will not happen overnight.**
  - real uncertainties and risks must be addressed
  - questions, as well as answers, are complex

Listed above are widely recognized reasons for pursuing the transformation of US military capabilities. It comes as no surprise that courses largely set by the conditions and assumptions of the Cold War are no longer appropriate to guide future US military capabilities.

To briefly highlight only one of these drivers: consider the commercialization and globalization of the defense technological and industrial bases. During the Cold War, DoD (and the Atomic Energy Commission (AEC) and other parts of the Federal Government) essentially owned these bases. It controlled the flow of resources into, and products out of, them. But these conditions no longer exist. DoD must find new ways to identify and exploit the offerings of the explosion of commercial technology (a point that is well recognized). Perhaps of greater importance, and more ominous, is the concomitant globalization of technology, which is making the fruits of technological revolutions available to all – including potential adversaries (state and substate). Today, the pace and availability of technology (such as space surveillance) can empower adversaries in a short time.

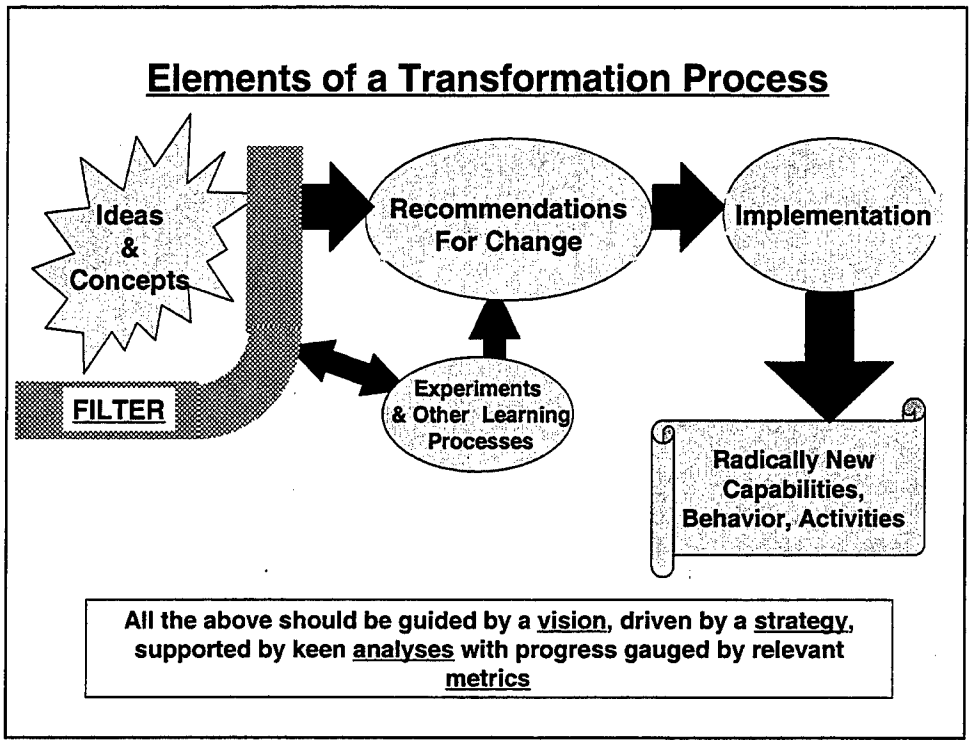
But perhaps most compelling is the plausibility that the world is in the midst of profound societal change, on the scale of the industrial revolution. This change is driven by current scientific and technological revolutions, such as:

- infotechnology, biotechnology, nanotechnology, and the like;
- "Moore's Law," leading to 10,000-fold change in a generation; and
- the Internet which, by providing interactive global connectivity, may be something quite different from radio and television.

It is implausible to think that such a societal change will not affect the preparation for, and conduct of, war, as well as military cultures.

Therefore, the concept of a "Strategic Pause" may be an unduly reassuring label for the current environment. "Change or Perish" may be more appropriate.

FINDINGS



What DoD is Doing About Transformation

The above figure highlights elements of a process germane to transformation in general. Using this as a framework, the Task Force identified the following questions to guide its investigation:

1) **Is there an overall vision?**
2) **Is there a strategy and roadmap for implementing the vision?**
3) **Are there processes for generating ideas and learning about them?**
4) **Are there procedures for implementing the results of the learning processes and for making resources available?**
5) **Are there arrangements for management and oversight and are there metrics to gauge progress?**

The subjects of these questions constitute a necessary, if not sufficient, set of elements for successful transformation. They provided the Task Force with a relatively straightforward, although admittedly simplified, means to paint a picture of transformation activities. This section describes transformation-related activities from an organizational perspective: what is going on in the Services, the joint world, and the Office of the Secretary of Defense (OSD).

The Task Force did not attempt to define precise boundaries for what constitutes a transformation activity, and some might feel the Task Force was too generous in attributing relevance. It is worth noting, though, that a set of incremental improvements, if sufficiently orchestrated and sustained, can lead to substantial change.

The Task Force also did not look at the various technology efforts underway in DoD. Technology itself will likely not produce an RMA, but clearly it is an essential enabler. How DoD deals with both the commercialization and globalization of technology is critical to creating and sustaining RMAs and is worthy of far more attention than the Task Force could direct in the short time it had.

New Activities Fostering Transformation

(particularly since the mid-1990s, when DSB studies began promulgating their own visions of RMAs & RBAs)

- **A vision – *Joint Vision 2010* (*JV2010*).**
  - offers bold objectives for future US military capabilities, quite different from those of the Cold War
  - is influencing what the Services, CINCs, and defense agencies are thinking and saying -- although it is not yet driving resources
- **New initiatives to foster concept development and learning.**
  - Services and joint community have initiated concept-based experimentation

Despite some criticism that it lacks substance, *Joint Vision 2010* (*JV2010*) has demonstrated considerable staying power and is serving its intended purpose. The Task Force reinforces what it believes is the intent of *JV2010's* creators: that *JV2010* is not about the year 2010 but rather about getting on a path leading to fundamentally new capabilities to conduct military operations. It offers bold objectives for future US military capabilities, quite different from those of the Cold War. It makes the case for new joint capabilities, not as ends in themselves, but as essential ingredients in achieving these ambitious objectives. *JV2010* also highlights the vital role of technology, particularly information technology, as a necessary (but not sufficient) enabler of new military capabilities. It emphasizes the centrality of information in warfare and the challenges of obtaining and sustaining information (and decision) superiority. While *JV2010* is clearly influencing what the Services, CINCs, and defense agencies are thinking and saying, it is not yet driving resources.

Initiatives to foster concept development and learning include:

- Office of Net Assessment's exploration of the RMA with the Services (and others) through a series of seminars and wargames, some with international participants. Net Assessment has conducted over 70 of these.
- Advanced Concept Technology Demonstrations (ACTDs) of various types. Some are relevant to transformation (UAVs) and a few in particular (MOUT, ELB, RFPI) address complex system-of-systems challenges relevant to new operational scenarios.
- Battle labs, experimentation efforts, and activities to explore advanced concepts in each of the Services.
- The Joint Concept Development and Experimentation effort, established in late 1998 with USACOM as executive agent.

New Activity Implementing Transformation

- **Elements of a roadmap.**
  - Services and some CINCs have roadmaps
  - Joint Staff prepared and published a *Joint Implementation Master Plan* for *JV2010*
  - the most recent *Defense Planning Guidance* (*DPG*) provides some direction for Joint Concept Development and Experimentation
- **Some efforts to prepare to exploit the results of the learning process.**
  - Services are beginning to implement experimentation "products," including doctrine and training
  - the Army has established a Warfighting Rapid Acquisition Program (WRAP) to foster implementation
  - JROC processes are under consideration to address joint requirements and non-materiel solutions

All of the Services and at least some CINCs have strategies and roadmaps that have at least a transformation flavor. The Task Force received briefings from US Special Operations Command (USSOCOM) and US Space Command (USSPACECOM) and both of these CINCs apparently devote considerable attention to the challenges of change and transformation. (USSOCOM's culture and unique status within DoD appears to foster experimentation and transformation.)

The Joint Staff has prepared and published a *Joint Implementation Master Plan* for *JV2010* and has identified operational challenges (over 20) and desired operational characteristics (over 70) to help guide transformation efforts. Perhaps most significant in terms of an overall DoD strategy, though, is the most recent *Defense Planning Guidance* (*DPG*) which provides direction specific to joint concept exploration and experimentation.

The Task Force also found some efforts to prepare to exploit the results of the learning process. The US Army and US Marine Corps have the most mature experimentation programs and are implementing some of the products of experimentation in areas such as doctrine and training. The Army has also established the Warfighting Rapid Acquisition Program (WRAP) to foster implementation. The Joint Requirements Oversight Council (JROC) has processes under consideration that are intended to address joint requirements and non-materiel solutions.

Recent Steps to Focus Attention and Oversight

- **Creation of a senior-level RMA Council.**
- **Assignment of coordinating authorities to Joint Staff directorates.**
- **USACOM assigned responsibility for Joint Concept Development and Experimentation.**
  - new Joint Experimentation (J-9) organization at USACOM to lead effort
  - five joint activities, including the Joint Warfighting Center, the Joint Battle Center, and the Joint Warfighting Analysis Center transferred to USACOM
- **OSD initiatives in logistics and information.**
- **Other initiatives that can contribute to transformation.**
  - expanded consequence management responsibilities assigned to USACOM
  - creation of Defense Threat Reduction Agency (DTRA)
  - Defensive and Offensive Computer Network Operations responsibilities assigned to USSPACECOM

Recent steps to focus attention and oversight include new responsibilities for the Defense Resources Board (DRB), US Atlantic Command (USACOM), and the Joint Staff.

In February 1998, Secretary of Defense Cohen directed the Deputy Secretary to chair special meetings of the DRB to oversee the Department's plans and initiatives to exploit the RMA and *JV2010*. The Director, Program Analysis and Evaluation was directed to oversee the review of RMA-related resource issues in the annual Program Review. The Assistant Secretary of Defense (Strategy and Threat Reduction) was tasked with developing a Department-wide approach to RMA implementation. The DRB's goal in this area is to monitor RMA-related efforts as the Department moves from developing promising ideas and technologies to fielding new capabilities, devising new battlefield operational concepts, and changing organizational configurations in the field. The Under Secretary of Defense (Acquisition and Technology) has made transformation of logistics a major objective and has set in motion a number of initiatives to pursue this goal.

USACOM's joint responsibilities, as joint force provider and for joint training and integration, are being greatly enlarged by the assignment of Joint Concept Development and Experimentation. A new Joint Experimentation (J-9) organization, headed by a two-star officer, has been established at USACOM to lead this effort.

Within the Joint Staff, the Director for Operational Plans and Interoperability (J-7) has been assigned a central role for coordinating *JV2010* implementation. The goal is to "operationalize" *JV2010*. The J-7 initiatives include establishing the beginnings of a Joint Vision Integration Cell, intended to be a decision support tool for the CJCS.

Transformation Initiatives Underway in the Services

Including Advanced Concept Development and Experimentation

- **Service concepts share common themes of rapid deployment, agility, small footprint, reachback, distributed operations, exploitation of information in all dimensions of operations and planning**
- **The following charts highlight some recent initiatives...**

Each of the Services has programs of advanced concept development and warfighting experimentation. While Service transformation efforts focus on different timeframes (short, mid, and long term), a common set of themes is emerging. Within their individual concepts (*Strike Force*, *Operational Maneuver From the Sea*, *Aerospace Expeditionary Force*) the Services have begun to address rapid deployment, agility, synchronized fires and maneuver, smaller support and mobility footprint, high-tempo distributed operations, reachback, decisive effect, and exploitation of information in all dimensions of operations and planning.

In support of *JV2010's* objective of *Full Spectrum Dominance*, the Services strive for capabilities that, if realized, would facilitate rapid dominance of an opponent. All describe the need for fast, flexible, and decisive forces, armed with all the advantages technology can provide. Thus, there is considerable commonality among the Navy's *Network Centric Warfare* and *Ring of Fire;* the Marine Corps' *Operational Maneuver From the Sea, Ship-to-Objective Maneuver;* the Army's *Strategic Preclusion Through Advanced Full Dimensional Operations;* and the Air Force's *Aerospace Expeditionary Force, Parallel Warfare,* and *Strategic Control.* These concepts complement ideas advanced by the Defense Science Board (particularly the 1996 and 1998 Summer Studies) and concepts included in the Chairman of the Joint Chiefs of Staff's *Concept for Future Joint Operations.*

US Army Transformation-Related Initiatives

- **Exploring future warfighting concepts through Army After Next project.**
- **Matured spiral development process.**
- **Conducted Task Force XXI series of experiments at Brigade and Division levels.**
- **Recently added Light and Strike Force thrusts to its AWE (heretofore devoted to heavier mechanized forces).**
- **Established Warfighting Rapid Acquisition Program to foster implementation of results of experiments.**

The Task Force calls particular attention to the Army's pioneering use of Spiral Development, an iterative process of concept development and experimentation.

United States Army Transformation-Related Initiatives

Over the past several years, the United States Army has conducted an active experimentation program from the Task Force through the Division level, while at the same time looking further into the future to shape an Army After Next. The Army's initial efforts, the Task Force and Division Advanced Warfighting Experiments, focused on heavy forces. In 1996, the Army began the Army After Next (AAN) project, which has used wargaming as a vehicle to develop a vision for the transformation and future application of landpower. The Army has made a significant and apparently successful effort to secure the participation of its sister Services in these activities. Spurred at least partly by the AAN efforts, the Army has now added other forces to the experimentation menu, with the development of the Strike Force, which will include leader development as a major objective, and the Joint Contingency Force Advanced Warfighting Experiment, which will be centered around a light brigade. While the Army's AAN concept development work has potential for bold change, its significant experimentation program thus far has focused on near-term enhancements to its current force.

The Army has also been exploring ways to facilitate the transformation process, most notably with the concept of spiral development. Spiral development joins users in the field with developers in schools and with contractors, early in the development process. The intent of spiral development is to coevolve military doctrine, tactics, and organizations along with systems, hardware, and software, in an iterative process.

The Army has also established the Warfighting Rapid Acquisition Program (WRAP) to facilitate the acquisition of successful products of the experimentation process. The intent is to mitigate the problem of sending good ideas to the "back of the acquisition queue" after an experiment. The program will mitigate this problem by having already allocated funds to rapidly acquire a WRAP candidate.

US Navy Transformation-Related Initiatives

- **Shifting focus from blue water to littoral environment via future warfighting concepts.**
- **Developing *Network Centric Warfare, Ring of Fires* concepts.**
- **Established Naval Warfare Development Center at the Naval War College.**
  - includes Maritime Battle Center
- **Conducting Fleet Battle Experiments, with the furbished *USS Coronado* as a floating battle lab.**
- **Introducing Integrated Warfare Architectures into the PPBS.**

The Task Force recognizes the network-centric warfare concept as a powerful organizer for conceiving, developing, and implementing new military capabilities.

United States Navy Transformation-Related Initiatives

The United States Navy is shifting its strategic focus from the Cold War *Maritime Strategy* to the new littoral strategy outlined in *Forward...From the Sea*. To meet the challenges of littoral warfare, the Navy is working on new concepts dealing with land attack (such as "ring of fire"), theater air and ballistic missile defense, undersea warfare (including organic mine countermeasures), and network-centric warfare, which envisions dramatic operational enhancements stemming from architectures of widely dispersed, but robustly networked, commanders, sensors, and forces.

The Navy has an active experimentation program, its Fleet Battle Experiment series, which is currently focused on near-term enhancements. The Navy has established a Navy After Next effort and joined with its sister Service, the Marine Corps, and executed several Fleet Battle Experiments in conjunction with the Marine Corps' Warrior series of experiments.

The Navy has also created new organizational structures and capabilities to promote experimentation and transformation. To support Fleet Battle Experiments, the Navy also established the Naval Warfare Development Center (NWDC), which is responsible for managing naval doctrine and concept development, and for providing the operational linkage to resource allocation. NWDC, in managing naval transformation, is designed to foster the coevolution of technology, doctrine, and organization. The Navy has also designated the *USS Coronado* as a floating battle lab to support fleet battle experiments. Finally, the Navy has also begun to wrestle with what may be the toughest part of the experimental process – implementation – by introducing Integrated Warfare Architectures into the Planning, Programming, and Budgeting System (PPBS).

USMC Transformation- Related Initiatives

- **Developed future warfighting concepts: *Operational Maneuver From The Sea*; *Ship to Objective Maneuver* and other support concepts.**
- **Established Marine Corps Warfighting Lab and SPMAGTF(X).**
- **Warrior Experiments: Hunter, Urban, Capable Warrior**
- **Established ChemBio Incident Response Force (CBIRF).**
- **Seeking innovative implementation strategies (COTS).**

Task Force particularly impressed at the content and culture of USMC experimentation efforts: pushing for new capabilities and tolerant of "failure".

United States Marine Corps Transformation-Related Initiatives

The United States Marine Corps has highlighted its history of innovation – exemplified by its work on amphibious doctrine and experimentation during the interwar years – to help motivate its recent initiatives to foster warfighting change. The Marine Corps has published an overarching future warfighting concept known has *Operational Maneuver From the Sea* (OMFTS), as well as a number of subordinate enabling concepts. To foster and manage experimentation, the Marine Corps established the Marine Corps Warfighting Lab and the Special Purpose Marine Air Ground Task Force (Experimental), or SPMAGTF(X). It embarked on a campaign of concept-based experimentation with its Warrior experimentation series, which include Hunter, Urban, and Capable Warrior Advanced Warfighting Experiments. The Marine Corps has made a special effort to promote risk-taking and overcome the cultural barriers to successful experimentation.

Achieving the capabilities envisioned in OMFTS, particularly those associated with logistics and remote fires, can result in a transformation of how the Marine Corps will fight in the future. Its recent Urban Warrior series of experiments focused on nearer term fixes to a very difficult operational challenge – operating in the urban littorals. Its Hunter Warrior series, reflecting ideas explored in several recent DSB studies, experimented with bolder, more adventurous concepts.

The Marine Corps has taken the initiative to meet new security challenges by establishing the Chemical-Biological Incident Response Force (CBIRF). CBIRF is an example of how ongoing experimentation and innovation can result in timely, real-world capability. The Marine Corps has also begun to wrestle with the difficult problem of implementation strategies. An example is its effort to exploit Commercial Off the Shelf (COTS) solutions in an innovative information technology investment strategy.

US Air Force Transformation-Related Initiatives

- **Implementing *Aerospace Expeditionary Force* concept, looking at Future Total Force (FTS).**
- **Established USAF Battle Labs.**
- **Designated ACC as Major Command for USAF experimentation, including standup of AC2ISRA.**
- **Conducting Expeditionary Force Experiments.**

The Task Force is impressed with the potential of the new expeditionary force concepts to enable fundamental change in joint capabilities.

United States Air Force Transformation-Related Initiatives

The United States Air Force's senior leadership is committed to moving the Air Force from its Cold War basing approach to a more expeditionary focus. The Air Force has developed the *Aerospace Expeditionary Force* concept to enhance the ability of aerospace forces to rapidly deploy and employ forces in support of a CINCs' need, as well as to operate as part of an integrated joint force. The Air Force is approaching the implementation of this concept in terms of its *Future Total Force.*

The Air Force has also implemented some key organizational changes to foster innovation and experimentation. It assigned the management of experimentation to its premier CONUS warfighting command, the Air Combat Command (ACC). Within this major command, the Air Force has also established the AC2ISR agency, which is responsible for planning and executing aerospace expeditionary experimentation. Six functionally focused Battle Labs have also been established. The Air Force recognizes the value of a spiral development approach and has implemented one that is designed to improve evolutionary acquisition and span traditional boundaries and "stovepipes."

The Air Force has embraced large-scale operational military experimentation with its yearly series of Expeditionary Force Experiments (EFX). The 1998 EFX examined a number of expeditionary C4ISR issues, such as JFACC reachback. The Air Force will also be an active participant in the FY00 Joint Advanced Warfighting Experiment (JAWE), which will be the first, large-scale multi-Service experiment of its kind. The Air Force has a number of futuristic concepts under development, particularly some dealing with space, but its current experimental program, like those of most of the other Services, tends to focus on the near term.

Principal Finding

- **DoD has articulated a bold vision for the transformation of military capabilities (*JV2010*).**
- **Many ongoing activities seem to be of high quality, particularly in the Services.**
  - impressive list compared to what DSB found a few years ago
- **But there is no clear way to determine if the direction or pace of these activities is right.**
- **Such determination depends on clear DoD-wide strategy, objectives, relevant metrics, and feedback mechanisms.**
  - strategy should include the early identification and resolution of conflicts about resources, culture, and power

The Task Force did not find such strategy, objectives, metrics, or feedback mechanisms.

Principal Finding

DoD may be underestimating the focus and effort needed to affect fundamental transformation. Such a transformation of military capabilities, and the concomitant transformation of an enterprise the size and complexity of DoD, is a formidable undertaking under any circumstances. This challenge is made more difficult under the current OPTEMPO (quite unlike the 1920s, a period often cited as a model for military innovation) and because of the common view that the US already has, far and away, the best military in the world. This view, while accurate, tends to foster complacency. **On a more subjective level, while the Task Force noted that pieces of a transformation process are in place, it did not find a pervasive sense of urgency.**

The following charts provide more specifics on concerns and impediments, organized into the five categories used in the preceding section: overall vision, strategy and roadmap, learning processes, implementation procedures, and management and oversight.

The Task Force's concerns fall into three categories:

- ❒ items, activities, or processes that the Task Force did not find but thought necessary for transformation;
- ❒ concerns about potential shortfalls in ongoing activities or processes (raised either by presenters to the Task Force or by members); and
- ❒ challenges to transformation that essentially come with the territory and are inherent in DoD's situation.

It is worth noting that if the Task Force did not find something, it does not mean it is not there, only that the Task Force did not find it.

What the Task Force Did Not Find

Overall vision

The Task Force found a military vision, *JV2010*, but not an overarching, clearly articulated, and widely promulgated vision, put forth by senior leadership on the transformation of the needed elements of the DoD enterprise. Such an overarching vision would link the revolutions in military and business affairs (that is, the link between how DoD should conduct its main business – the conduct of military operations – and the vision of the way it should go about the rest of its business).

There are also gaps in *JV2010* itself. The vision does not do justice to the importance of the coalition aspects of future US military operations or to the challenges of creating and sustaining such coalitions as the US aggressively pursues revolutions in military affairs. (The Task Force notes that recent *JV2010* presentations by the Joint Staff are beginning to address the coalition dimensions.)

Finally, although *Full Spectrum Dominance* is intended to cover a wide range of contingencies, it needs to be more clearly stated that *JV2010* is not just about high-end conflicts and is also relevant to the host of lesser contingencies that the US military will be called-on to respond to.

Strategy and roadmap

The Task Force did not find a DOD-wide, comprehensive strategy and roadmap for transformation. Such a strategy and roadmap should lay out objectives, elaborate the general concepts of *JV2010* into a more concrete and actionable form, and establish priorities, and would help focus ongoing *JV2010* implementation efforts. The *Joint Implementation Master Plan* describes processes and procedures for *JV2010* implementation, but does not establish priorities or focus and does not serve as a strategy and roadmap. The most recent DPG does offer some direction to concept development and experimentation, and thus takes a useful step toward providing such focus, but this step is small and still inadequate.

Concept development and learning processes

The Task Force found experimental efforts in all Services – of varying maturity, scope, and scale. But the Task Force's impression is that most of this activity is directed at the nearer term and is based on existing organization and doctrine. The Task Force did not find much effort directed toward new ways of fighting, enabled by more fundamental changes in Doctrine, Organization, Training, Materiel, Leadership, and Personnel (DOTMLP). One exception was the Marine Corps' *Warrior* experiments. The Task Force does recognize that experiments have multiple objectives and that, in a robust process to coevolve DOTMLP, the seeds for more profound change may be sown.

The Joint Concept Development and Experimentation program at USACOM is too new to draw robust conclusions, but several concerns were raised to the Task Force, including whether there will be sufficient focus and resources to do justice to USACOM's new responsibilities.

Some in the Services seem worried that the new experimentation activity at USACOM could stifle innovation within the Services. The Task Force was more concerned, however, that Joint Experimentation would be marginalized by:

- focusing on today's seams (very narrowly defined) between Service provided forces;
- accepting a zero-defects culture that promotes showcasing, thus becoming an irrelevant sideshow with no real impact on DOTMLP (experimentation requires a tolerance for failure and surprise in order to foster discovery and learning); and
- tolerating the use of models and measures of effectiveness that promote advocacy and that are not relevant to exploration of new concepts and notions central to *JV2010*.

The latter two concerns can apply to all DoD and not just Joint Experimentation.

Gaps, Obstacles, and Other Concerns About Transformation Activities

Implementation procedures
The Task Force found a need for processes to move promising experimental products and results rapidly into the field. The lack of such procedures, other than to go to the back of the requirements queue, was perhaps the most frequent concern expressed by presenters to the Task Force. If this concern becomes pervasive, it could promote skepticism, cynicism, and other transformation inhibiting attitudes. Specific concerns include the following:

- priorities and resources are not adequately reassessed and assigned as more is learned from experiments, and
- implementation procedures are not attuned to doctrinal, organizational, and conceptual change.

The future joint voice needs to be strengthened in requirements and resource allocation processes, not just in terms of influence, but also in terms of information, analysis, data, and experimental results. DoD needs well "armed" voices (with data, analysis, modeling and simulation, or experimental results) speaking on behalf of future CINCs and JTF commanders. The intent is not to replace or submerge the Service inputs, but rather to strengthen the future joint voice (the operational customer) to help ensure attention to joint warfighting needs and to create new joint options that would otherwise not be on the menu.

Management and oversight of transformation activities
There is a need for a full-time staff in the Pentagon dedicated to transformation. While there is a small group in J-7, the Task Force is concerned about whether J-7 is sufficiently empowered to make things happen. The Task Force is also concerned that the uniformed/civilian partnership between the Joint Staff and OSD is not nearly as close or cooperative as it should be to foster transformation.

The Task Force did not find metrics and criteria, which are essential to gauge progress toward achieving a revolution in military affairs or implementing the ambitious objectives of *JV2010*. (There are metrics being established for RBA-related initiatives – although, not surprisingly, some of these early attempts to establish measures miss the mark and will need to evolve.)

Lastly, the Task Force found considerable worry among staff that transformation activities do not fare well in competition with today's problems for high-level attention.

Making Transformation Happen

- **There is a growing body of accounts of transformation attempts.**
  - successful and otherwise
  - addressing corporate and military experiences
  - much of the work of previous revolutions in military affairs has been sponsored by Andy Marshall, the Director of DoD's Office of Net Assessment
- **Successful transformation -- in corporate and military spheres -- share several attributes.**

Making Transformation Happen: Insights from Previous RMAs and Corporate Experiences

MG Robert Scales, military historian and current Commandant of the US Army War College, in his discussions with the Task Force, highlighted several features of successful large-scale military innovation. These are:

- a catalyst (defeat in war can be a powerful one),
- the creation of a common cultural bias,
- uninterrupted support from top leadership,
- processes and people who can transform visions and ideas into concepts (Scales notes that the developmental steps between vision and implementation are the most fragile), and
- experimentation – characterized by feedback, empiricism, and seeing "what might be" instead of merely "what happened or who won." The lost opportunity that can stem from failing to see beyond initial performance is also made by Andrew Grove in his book *Only the Paranoid Survive* (Bantam Books, 1996).

The importance of creating a common cultural bias is amplified by Murray and Millett, eds., in *Military Innovation in the Interwar Period* (Cambridge University Press, 1996). They argue that any handful of visionaries, however dedicated and vocal, cannot foster fundamentally new ways of fighting without the acquiescence or grudging cooperation that is implied by emerging bureaucratic recognition and acceptance. Millett, in another chapter in the same book, highlights the importance of the civil-military relationships. Other ingredients for successful transformation are:

- tolerance for surprise and failure (experiments fail only when nothing is learned),
- individuals with "Innovation Gift" – rare in any enterprise but perhaps more so in military culture, where the stakes are life and death and there are good reasons for following the tried and true,
- long tours – successful innovation takes time (12 years for ADM Moffet), and
- embracing and promoting competition – among ideas, technologies, doctrine, and organizational constructs.

Technology can sometimes foster profound innovation on its own. More often, fundamentally new ways of conducting military operations are achieved by emerging technologies that serve as enablers for much more far-reaching changes in doctrine, concepts, tactics, and organization. The United States is awash in such potentially enabling technologies today.

Attributes of Successful Transformation
Ideal & DoD

Attribute	Successful Corporate (and Government)	Current DoD Behavior
• Vision of new organization	• Clear, simple, persuasive	• Many partial, incompatible visions
• Leader commitment	• Evident, constant, coherent	• Dispersed, episodic, inconsistent
• Urgency	• Clear, whether internally or externally created	• Unclear, variable
• Persistence	• Multiyear, multi-leader	• Changes with executives, rotation
• Motivation	• Supportive, quantitative & qualitative incentives	• Contradictory incentives
• Measures	• Understandable, simple, reasonable (not complex)	• Varied, disaggregated
• Finance/Budgets	• System helps mid-managers make change	• System impedes change
• Failure	• Tolerated, if reasonable	• Demand for error-free performance
• Trade-offs	• Made early by top people	• Deferred to out-years

The chart above, derived from the experiences of members of the Task Force, identifies attributes of successful corporate transformation in ten categories. The column on the right offers the Task Force's impression of DoD behavior in these ten categories. The entries are subjective and some, at least, are arguable. The intent is not to grade DoD or proclaim "corporate good; DoD bad", but to highlight the challenges that a large bureaucracy like DoD faces in pursuing fundamental change. The following are additional observations on corporate experience with transformation.

- ❒ The top few (to a few dozen) people make or break the transformation effort.
- ❒ The top must insulate the middle from extraneous outside change.
- ❒ Top behavior must be consistent with its words.
- ❒ Money often does not drive change, but adequate resources are needed.
- ❒ Conflicting values must be identified and resolved.
- ❒ Those who resist must be converted or moved out of the way.

Lastly, John P. Kotter, author of a large and growing body of transformation literature, shares the following insights in his book, *Leading Change* (Harvard Business School Press, 1996). The following are the eight stages he lists for a process to create major change.

- ❒ Establishing a sense of urgency.
- ❒ Creating the guiding coalition.
- ❒ Developing a vision and strategy.
- ❒ Communicating the vision.
- ❒ Empowering broad-based action.
- ❒ Generating short-term wins.
- ❒ Consolidating gains.
- ❒ Anchoring new approaches in the culture.

Kotter emphasizes the importance of creating and promulgating a vision and reports that a common failure in transformation efforts is under-communicating the vision, sometimes by as much as a factor of 1,000.

While there are relevant lessons from corporate world transformation experiences, the comparison can be pushed too far; the "CEOs" of DoD face a considerably more complex set of challenges than their equivalents in the corporate world.

CONCLUSIONS

Conclusions

- **The Task Force found an emerging focus on transformation in high-level policy documents and it found new activity supporting transformation.**
  - these have not yet had a significant effect on resource allocation, outyear projections, or weapon system development programs
- **Some critical elements of an effective transformation process are missing and some potential inhibitors are present.**
- **Judgments regarding what should be done about these gaps and inhibitors depend upon one's sense of urgency about transformation.**
- **Task Force members share a considerable sense of urgency and thus believe that transformation activities will proceed far too slowly.**
- **The Task Force offers the following recommendations to enhance and accelerate the process of transformation.**

RECOMMENDATIONS

Task Force Recommendations

- **The most important elements the Secretary of Defense and the Chairman JCS can provide to accelerate transformation are focus and a greater sense of urgency.**
  - create a more explicit strategy and roadmap to guide transformation activities
  - establish and use metrics to assess progress toward transformation
- **In addition, the SecDef and CJCS should:**
  - strengthen the future joint voice -- in concept development, experimentation, requirements, and resource allocation
  - focus on people -- make leader development, military and civilian, a major transformation objective
  - nurture a guiding coalition to help sustain transformation efforts.
- **Lastly, the Task Force strongly recommends that the Secretary of Defense promulgate an overarching vision of the transformation of DoD.**
  - a vision that encompasses *JV2010's* military dimensions and ties together the revolutions in military and business affairs

Summary of Recommendations

The Task Force grappled with the formidable challenge of transforming US military capabilities. Transformation is clearly a CEO's game, requiring sustained attention and commitment from the most senior leadership of the enterprise. Recognizing this, the Task Force limited its recommendations to a few, all of which are directed at the SecDef and CJCS and aimed at accelerating transformation and overcoming the major obstacles. These are highlighted above and elaborated in the following pages.

The Task Force does not recommend a transformation czar. However, fundamental transformation of US military capabilities will not be achieved with part-time oversight. While casts of thousands are inappropriate and counterproductive, there is a greater danger now of too few people being assigned and committed to fostering transformation.

Therefore, the SecDef and CJCS still need an organizational construct empowered to achieve measurable objectives. USACOM, with its new responsibilities for Joint Concept Development and Experimentation, could be one part of such a construct. Another part of the construct could be a cadre – uniformed and civilian – within DoD, committed full time to the SecDef's and CJCS's transformation vision. This cadre would be charged with developing the strategy, roadmap, and metrics, and with serving as catalysts and integrators for all transformation activities (Service, joint, interagency, and coalition), particularly as they relate to implementation.

Create an Executable Strategy and Roadmap for Achieving the Departmental Vision

- **Establish priorities and focus by identifying a manageable set of objectives (on the order of a half dozen).**
  - address the fundamental input and outcome parameters -- resources and force capabilities -- over time
- **Provide incentives for divestiture as a means of accelerating transformation.**
- **Identify the major obstacles to successful transformation.**
  - these run the gamut from adversary responses, to resource and acquisition needs, to cultural and political challenges
- **Deal with real-world disruptions to any transformation roadmap.**
  - these include military contingencies, political actions and disruption through changes in funding or people
- **Link the revolutions in military and business affairs.**
- **Address explicitly the allied and coalition connection.**
  - identify roles for key Allies and Coalition partners (in both bilateral and multilateral arrangements) in concept development, experimentation and other transformation activities

Create a Strategy and Roadmap

The Task Force did not address DoD's current investment portfolio. It does believe that a significant reallocation of resources will be necessary to achieve the desired revolution in military affairs. It will require more than a revolution in business affairs to pay for the RMA.

- "Current" programs project a decades-long bow wave offering little or no headroom for major new initiatives.
- Efficiencies in infrastructure management can do much to give DoD headroom for exploiting the RMA, but the desired fundamental transformation will require the leadership to make some tough "winner and losers" decisions.
- USACOM cannot assume the burden of making such decisions – it will put them in opposition to vital participants (Services) and inhibit the exercise of their joint experimentation efforts, which involve integrating and creating synergies among Service efforts.

The Task Force notes that not all elements of the force must be transformed to achieve an RMA (for example, the German's success with Blitzkrieg in 1940). RMAs can stem from identifying and exploiting synergies between legacy and new forces.

Experimentation, part of the front-end of transformation, does not place nearly as much demand on DoD's budget. Approximately $550 million/year (from FY00-05) is currently allocated for experimentation to cover all Services and USACOM. This amount certainly can enable much useful experimentation and, even if doubled, could be accommodated without substantial Department-wide reallocation. Finding the right people to participate in experiments is probably a more challenging resource constraint than dollars.

Create a Standing Capability and Process for Assessing Progress

in achieving the Strategy to Recommend Actions Required for Progress

- Develop and use metrics.
- Identify and measure outputs – not just inputs – to provide hard-nosed, open feedback.

Develop and Use Metrics

The Task Force cannot overstate the importance of metrics and other criteria to help DoD leadership gauge progress toward transformation and to make course corrections. These measures are needed to:

- support analysis of new concepts (current models and measures of effectiveness are largely irrelevant, or worse, with respect to exploring information and decision superiority, situation understanding, dominant maneuver, and other notions central to *JV2010*);
- judge the pace of transformation of fielded (actual) capabilities; and
- assess progress of experimentation and other learning processes, particularly in their early stages.

The Task Force was charged with exploring measures for experimentation activities and offers suggestions on the following page. Metrics to assess field capabilities were beyond the scope of this effort. The Task Force notes that such metrics will need to evolve as more is learned, and will not lack controversy. An initial set of such metrics could include simple "RMA indicators," such as the growth in the number of smart weapons or unmanned platforms. It should evolve to include more complex capability measures (such as, reduction in the time required to deploy a potent force, or the increase in force capability that could be deployed within a week) and still others that measure information or decision superiority.

The Task Force suggests that the transformation strategy, roadmap, and standing capabilities to assess progress should be embedded as much as possible in existing documents and processes, such as the *DPG*, PPBS, and DRB. In addition to taking advantage of well-established and recognized processes, the *DPG* also provides an appropriate venue to blend the transformation objectives (revolutionary and dramatic) into an overall strategy for change.

The Task Force visited the nascent Joint Vision Integration Cell, a Joint Staff initiative to help oversee *JV2010* implementation. While now only a shell, with commitment and strong involvement from the CJCS and SecDef, it could be developed into a resource to assess transformation progress.

Gauging Progress Before Major Changes Show Up in the Field

During the next few years, look to robustness of processes.

Strong senior-level focus

- ❒ Is there SecDef and CJCS guidance on transformation priorities?
- ❒ Are there new operational joint concepts at theater campaign level?
- ❒ Are there concept development and experimentation efforts addressing bold new capabilities?
- ❒ Are competing concepts and alternative approaches being identified and explored?

Openness to learning

- ❒ Are experiments real learning processes or merely "stagecraft?"
- ❒ Are there repositories and mechanisms to nurture "corporate knowledge" from learning processes?
- ❒ Are there processes to coevolve organization, doctrine, and training, as well as materiel?
- ❒ Are there new simulations and other tools for exploration of new concepts?

Broad participation in concept development and experimentation

- ❒ Are the Services heavily involved with each other and with USACOM in concept development and experimentation?
- ❒ Are coalition partners and interagency players involved in concept development and experimentation?

Commitment to implementation

- ❒ Do most of the key military personnel engaged in doing experiments go on to billets where their experience can foster transformation?
- ❒ Are there procedures to rapidly implement the results of experiments?
- ❒ Have there been changes in statute or policy to facilitate transformation?

Strengthening the Future Joint Voice

The Task Force strongly endorses the CJCS's objective to strengthen the joint voice in the Prepare Now element of the National Military Strategy. The intent is not to supersede the Services' role, but rather to create an informed and effective voice representing the customer – future CINCs and JTF commanders. A combination of steps is likely needed to accomplish this goal:

- ❒ expand the role of the geographical CINCs in requirements and resource allocation processes. At a minimum, increase their visibility into these processes (some say that CINCs don't do futures – the Task Force believes they could if directed and resourced);
- ❒ empower one CINC to be the principal future joint voice; and
- ❒ enable the Joint Staff to be more active in joint requirements and investment decisions. For example, through organizations such as the Joint Theater Air Missile Defense Organization (JTAMDO).

Highlighted below is one responsibility of the strengthened future joint voice– concept development and experimentation.

The SecDef and CJCS need to be particularly supportive of USACOM – one of their major agents for change – as it takes on joint concept development, experimentation and other future joint voice responsibilities.

Experimentation is hard – indeed, an unnatural act – for any large, established organization. The current culture works against it and the usual "can do" attitude will not be enough to generate success. USACOM needs the help of the SecDef and CJCS to involve the Services and other CINCs in experimentation and related activities, overcoming turf and other cultural biases and earning confidence that legitimate needs are understood and protected.

The new Joint Concept Development and Experimentation activities can avoid becoming a joint stovepipe by exploiting, integrating, and ultimately influencing the Services' concept development and experimentation efforts. There are incentives (carrots and sticks) to foster fruitful collaboration among and between the Services, USACOM, and the other CINCs. One is to provide USACOM with sufficient resources so that it is able to direct some to the Services or other CINCs. The specter of the Congress imposing its own solutions on DoD is another incentive.

The Task Force strongly endorses the guidance provided to USACOM, and articulated by the CINCUSACOM, that Joint Experimentation must go beyond interoperability and today's Service "seams." It should exploit integration, synergies, and interdependence to create and explore joint capabilities that do not exist today. C4ISR and logistics are among the areas with potentially high payoffs from pursuit of "born joint" capabilities. DoD also needs capacity for systems architecture and systems engineering in order to develop and ultimately field born joint capabilities.

Experimentation is essential to transforming DoD. Critical issues must be addressed through an experimental process that fosters competition of ideas. Only after such experimentation can there be sufficient confidence to adopt new operational concepts, doctrine, organization, training, and so on. But experimentation is not synonymous with transformation. Not all steps toward transformation require experimentation, and experimentation should not be a series filter through which all ideas must pass. For example, some of the proposed initiatives to transform the way DoD manages its business affairs require pilot programs to demonstrate effectiveness rather than experimentation.

In summary, the Task Force recommends:

<u>To USACOM: Hurry up!</u> Don't try to be perfect – get the learning process started.

<u>To Everyone Else: Give it time!</u> Don't expect definitive answers early – this is a process, not an event.

Joint Concept Development and Experimentation Initiatives

The Secretary of Defense and the Chairman JCS should direct Joint Concept Development and Experimentation initiatives to:

A. Exercise the entire process as soon as possible, from concept development through implementation of recommended DOTLMP changes, to address early-on the toughest phase of the process – implementation.

- ❒ OSD and the Joint Staff, working with USACOM and the Services, should adapt existing processes, and perhaps create new ones, to demonstrate that experimental results can be transformed rapidly into fielded capabilities.
- ❒ Joint experimentation should avoid focusing on so-called "super bowl" culminating events – expensive and unwieldy activities that inhibit learning. Instead, the process should be built on a broad-based iterative approach using a variety of tools, simulations, and venues that can lead to early discovery. Early on, searching for questions is more important than finding answers.
- ❒ One element of this process should be establishing a program similar to the Army's WRAP for joint experimentation.

B. During experimentation, push concepts to failure to expose breakpoints and vulnerabilities by providing aggressive adversary free play.

- ❒ Allow for responsive, technologically feasible, and asymmetric threats, and not just the validated evidentiary threat.
- ❒ Recognize that experiments can be rich learning experiences – providing a surrogate for the "focusing-the-mind" impact of losing battles and wars, without the associated national trauma.
- ❒ Identify and explore alternative approaches and competing concepts (a stated goal in the most current DoD *Annual Report*).

C. Establish a Joint Task Force headquarters at USACOM to take operational control of required forces for planning and executing Joint Advanced Warfighting Experiments.

- ❒ The Services have learned the advantages of having a dedicated core staff to plan and execute advanced warfighting experiments (for example, the Marine Corps' SPMAGTF(X) and the Navy's *USS Coronado*/3rd Fleet Staff).
- ❒ Without such an organization, it will be difficult to coevolve the elements of DOTMLP in a spiral development process.

Develop Transformation Leaders

The Secretary of Defense and the Chairman of the Joint Chiefs of Staff should place high priority on developing transformation leaders.

- **Identify and groom a cadre of future leaders,** imbued with a culture that fosters innovation and transformation. These leaders need to be assigned where they can be catalysts for change and innovation. Key billets include professional military education and experimentation, both of which played critical roles in successful innovation in the 1920s and 1930s.
- **Make future leader development a major objective of joint and Service experimentation, at least as important as any other experiment objective.** Immersing future leaders in challenging operational environments will stimulate bold thinking about future challenges. This was a major accomplishment of the Army's 9th ID experiment in the early 1980s, which is sometimes too narrowly and negatively judged from a short-term materiel perspective.
- **Ensure that this cadre of leaders is rewarded or not unintentionally punished by the "system"** (for example, by providing prescripts, via the Service Secretaries, to Service Promotion Boards).

Foster Coalitions Supporting Transformation

The Secretary of Defense and the Chairman JCS should foster coalitions supporting transformation. Clearly, there are important roles for the defense industry and for defense intellectuals and academics and there must be an internal guiding coalition that involves Services Secretaries and Chiefs. Three groups of people outside the DoD who can play especially important roles are:

- **Members of Congress, perhaps in a "transformation caucus" across the four defense committees**. Nuclear weapons were the post-WWII RMA and the Joint Committee on Atomic Energy played a powerful partnership role with successive administrations. Building such a partnership is more difficult today, in part because of the reduced role of security issues on the national stage. In spite of some concerns about Congressional micro-management, the Task Force finds it difficult to foresee a sustained transformation effort without such a partnership. Furthermore, such a partnership will be needed to address critical issues, such as creating more flexibility in budgetary processes to permit the timely reallocation of resources as more is learned from experiments and real-world operations.

- **DoD's recently retired (and retiring) CINCs, Service Chiefs, and other senior leaders.** The expertise and commitment of this pool of talent, always of value to DoD, can be an especially productive resource now because of recent personal experiences (undoubtedly both rewarding and frustrating) in promoting transformation.

- **Business executives and other experts with hands-on transformation experience.** Existing or new advisory boards are among the venues for engaging this group, which brings not only expertise relevant to DoD's challenges but also increasing influence in national issues.

Create and Promulgate an Overarching Vision

The Secretary of Defense, with the help of the Chairman of the Joint Chiefs of Staff, should create and promulgate an overarching vision of the transformation of the Department of Defense over the next decades. This overarching vision should:

- ❒ encompass a military transformation vision (such as *JV2010*) that is linked to the desired transformation of DoD's culture and conduct of business affairs;
- ❒ address DoD's future interactions with other elements of the US Government and coalition forces and make clear that transformation of military operations is not limited to high-intensity combat; and
- ❒ be, like *JV2010*, published as a separate document and widely circulated. Elements of such a vision already exist in documents, such as the *Annual Report to the President and Congress*.

Why is another vision necessary when DoD already has one in *JV2010*? The reason is that a vision is important to successful transformation, and a vision limited to military operations is incomplete. DoD cannot revolutionize its core business – the conduct of military operations – unless it changes the way it does business.

The commercial sector is revolutionizing its business practices, breaking down functional stovepipes and dramatically shortening cycle times. Senior DoD leadership is attempting to adopt new processes and practices that would affect how DoD establishes requirements, acquires materiel, deals with information, manages its infrastructure, recruits and trains civilian personnel, and conducts other activities critical to creating and sustaining military superiority.

These changes are needed to gain efficiency and help pay for a revolution in military affairs. But of even greater import, they are needed to achieve much more agile and responsive organizational behavior, and – like successful corporate enterprises – break down stovepipes and shorten cycle times. Thus, revolutions in military and business affairs are inexorably linked.

Promulgating a persuasive, overarching vision and associated strategy can foster buy-in from successive leaderships and will contribute to overcoming a fundamental challenge DoD faces: the tenure of its leadership is much shorter than the time required to realize fundamental transformation.

SUMMARY

SUMMARY

- **Geopolitics have changed.**
- **Technologies are changing in revolutionary ways.**
- **These factors demand new capabilities and a discontinuous change in DoD behavior.**
- **Important issues increasingly involve joint, interagency, coalition forces.**
- **DoD is taking steps toward these directions, but sources of institutional leadership for such change is not clear to the Task Force.**
- **The Task Force offers a number of recommendations to enhance and accelerate the process of transformation.**

Change within DoD today involves an inevitable tension between dealing with today's problems and preparing for tomorrow's. But an even more formidable tension exists between alternative views of tomorrow's challenges and between competing approaches to address them. Transformation is about defining and implementing a vision of the future different from the one embedded, if only implicitly, in DoD's current plans and programs. Transformation activities, thus, require high-level attention and support to survive in DoD's intensely competitive environment.

APPENDIX A: TERMS OF REFERENCE

MEMORANDUM FOR CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT: Terms of Reference–Defense Science Board Task Force on DoD Warfighting Transformation

You are requested to form a Defense Science Board (DSB) Task Force on the DoD's activities directed toward preparing for a transformation in the conduct of war.

Tasks to be Accomplished:

The Task Force shall review the activities underway in the Department of Defense relevant to such transformation and:

1. Provide an independent, comprehensive picture of the DoD's efforts toward transformation that encompasses organizational responsibilities, processes and anticipated products.

2. Identify both opportunities to enhance the transformation process (accelerate, make more robust) and challenges/obstacles that impede progress.

3. Recommend criteria to gauge progress in transformation activities over the next several years.

The review shall include the following with respect to their relationship to transformation objectives:

1. Responsibilities and authorities of OSD, the JCS, the Armed Forces and the CINCS.

2. The Joint and Service processes for generating requirements and opportunities for new capabilities.

3. The organizations and processes responsible for Joint and Service doctrine development.

4. The programs and organizations devoted to innovation and experimentation, including the role of analytic concepts, measures of effectiveness, models, simulations and joint field tests.

5. Joint and Service training and military education establishments.

The Task Force will present its finding and recommendations by 30 April 1999 followed by a written report by 30 June 1999.

The study will be Co-Sponsored by the Under Secretary of Defense (Acquisition and Technology) and the Vice Chairman, Joint Chiefs of Staff. Dr. Theodore Gold will serve as the Task Force Chairman, LTC Christopher Shepherd, USA, will serve as Executive Secretary and Maj Tony Yang, USAF, will serve as the Defense Science Board Secretariat Representative.

The Task Force will be operated in accordance with the provisions of P.L. 92-463, the "Federal Advisory Committee Act," and DoD Directive 5104.5, "DoD Federal Advisory Committee Management Program." It is not anticipated that this Task Force will need to go into any "particular matters" within the meaning of Section 208 of Title 18, United States Code, nor will it cause any member to be placed in the position of acting as a procurement official.

APPENDIX B: TASK FORCE MEMBERSHIP

Chairman
Dr. Theodore S. Gold*
IDA

Executive Secretary
COL Christopher Shepherd
OSD(Policy)

Members

Mr. Jack Bachkosky
SPC

Mr. Michael Bayer*
Army Science Board

Mr. Denis A. Bovin*
Bear Stearns & Co., Inc

Mrs. Natalie W. Crawford*
RAND

Mr. Frank Finelli
The Carlyle Group

Ms. Michele Flournoy
NDU

Dr. Robert J. Hermann*
Connecticut Technology Associates

Mr. Arnold L. Punaro
SAIC

Mr. John M. Stewart*
McKinsey & Company, Inc

Government Advisors

BGen James Cartwright, USMC
Joint Staff, Deputy Director, J-8

MG George Close, USA
Joint Staff, Director, J-7

Maj Gen Donald Cook, USAF
United States Air Force

Mr. Joe Eash
DUSD (AT)

CAPT Karl Hasslinger, USN
OSD Net Assessment

Dr. James Miller
DASD (RP&CP)

MG Robert St. Onge Jr., USA
United States Army

RADM Raymond Smith, USN
United States Navy

Mr. Jack Zavin
OASD C3I

Support Staff

Maj Tony Yang, USAF
DSB Secretariat

Mr. Christopher Bolkcom
SAIC

Mr. Michael Donley
Hicks and Associates, Inc.

Mr. Christopher Szara
SAIC

* Denotes DSB Members

APPENDIX C: BRIEFINGS AND DISCUSSIONS

BGen J. Cartwright, USMC
Joint Staff, Deputy Director, J-8

VADM Art Cebrowski
President, Naval War College

MG George Close, USA
Joint Staff, Director, J-7

Dr. Jay Davis
Director, DTRA

Mr. Joe Eash
DUSD (AT)

BG Stephen Ferrell, USA
J-5, USSPACECOM

Dr. Jacques Gansler
Under Secretary of Defense (A&T)

LTG Henry T. Glisson, USA
Director, DLA

BG Stan Green, USA
USA Training and Doctrine Command

RADM John Grossenbacher
OPNAV N80

LTG Patrick Hughes, USA
Defense Intelligence Agency

ADM David Jeremiah, USN (Ret.)
Technology, Strategies & Alliances

RADM Herbert Kaler, USN
JTAMDO

LTG John Keane, USACOM
Deputy Commander in Chief, USACOM

Mr. Andrew Krepinevich
Center for Strategic and Budgetary Assessments.

General Charles C. Krulak, USMC
Commandant, United States Marine Corps

BG Geoffrey C. Lambert, USA
Director, Operations, Plans & Policy, USSOCOM

Mr. William J. Lynn
Under Secretary of Defense (Comptroller)

Mr. Andrew Marshall
Director, Net Assessment

LTG John M. McDuffie, USA
J-4, The Joint Staff

Dr. James Miller
DASD (RP&CP)

Mr. Arthur Money
Senior Civilian Official, OASDC3I

General Dennis J. Reimer, USA
Chief of Staff, United States Army

LTG John E. Rhodes, USMC
Commanding General, MCCDC

GEN Robert RisCassi, USA (Ret.)
L3 Communications

MG Robert St. Onge Jr., USA
Director, Strategy, Plans & Policy

MG Robert Scales, USA
Army War College

GEN Peter Schoomaker, USA
CINC USSOCOM

Maj Gen Norton A. Schwartz
Director, AF/XPX

GEN John Shalikashvili, USA (Ret.)

General Henry H. Shelton, USA
Chairman, Joint Chiefs of Staff

Mr. Robert R. Soule
Director, Program Analysis & Evaluation

LtGen Martin Steele, USMC
DCS, Plans, Policy and Operations

The Honorable Mac Thornberry
US House of Representatives

Dr. Ted Warner
ASD (S&TR)

APPENDIX D: CONGRESSIONAL LANGUAGE

Public Law 105-261

Title IX – Department of Defense Organization and Management

Subtitle A – Department of Defense Officers and Organization

Sec. 903 Independent Task Force on Transformation and Department of Defense Organization

(b) Independent Task Force on Transformation and Department of Defense Organization – The Secretary of Defense shall establish a task force of the Defense Science Board to examine the current organization of the Department of Defense with regard to the appropriateness of that organization for preparing for a transformation in the conduct of war. The task force shall be established not later than November 1, 1998.

(c) Duties of the Task Force – The task force shall assess, and shall make recommendations for the appropriate organization of, the Office of the Secretary of Defense, the Joint Chiefs of Staff, the individual Armed Forces, and the executive parts of the military departments for the purpose of preparing the Department of Defense for a transformation I the conduct of war. In making those assessments and developing those recommendations, the task force shall review the following:

(1) The general organization of the Department of Defense, including whether responsibility and authority for issues relating to a transformation in the conduct of war are appropriately allocated, especially among the Office of the Secretary of Defense, the Joint Chiefs of Staff, and the individual Armed Forces.

(2) The joint requirements process and the requirements processes for each of the Armed Forces, including the establishment of measures of effectiveness and methods for resource allocation.

(3) The process and organizations responsible for doctrinal development, including the appropriate relationship between joint forces and service doctrine and doctrinal development organizations.

(4) The current programs and organizations under the Office of the Secretary of Defense, the Joint Chiefs of Staff, and the Armed Forces devoted to innovation and experimentation related to a transformation in the conduct of war, including the appropriateness of –

  (A) conducting joint field tests;

  (B) establishing a separate unified command as a joint forces command to serve, as its sole function, as the trainer, provider, and developer of forces for joint operations and for conducting joint warfighting experimentation;

  (C) establishing a separate Joint Concept Development Center to monitor exercises and develop measures of effectiveness, analytical concepts, models, and simulations appropriate for understanding the transformation in the conduct of war;

  (D) establishing a Joint Battle Laboratory to conduct joint experimentation and to integrate the similar efforts of the Armed Forces; and

  (E) establishing an Assistant Secretary of Defense responsible for transformation in the conduct of war.

(5) Joint training establishments and training establishments of the Armed Forces, including those devoted to professional military education, and the appropriateness of establishing national training centers.

(6) Other issues relating to a transformation in the conduct of war that the Secretary considers appropriate.

(d) Report – The task force shall submit to the Secretary of Defense a report containing its assessments and recommendations not later than February 1, 1999. The Secretary shall submit the report to the Committee on National Security of the House of Representatives and the Committee on Armed Services of the Senate not later than March 1, 1999, together with the recommendations and comments of the Secretary of Defense.

APPENDIX E: ACRONYMS

A&T	Acquisition and Technology
AAN	Army After Next
ACC	Air Combat Command
ACOM	Atlantic Command
ACTD	Advanced Concept Technology Demonstration
AEC	Atomic Energy Commission
AEF	Aerospace Expeditionary Force
AOR	Area of Responsibility
ASD	Assistant Secretary of Defense
AWE	Advanced Warfighting Experiment
C3I	Command, Control, Communications, and Intelligence
C4	Command, Control, Communications, and Computers
C4I	Command, Control, Communications, Computers and Intelligence
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance
CBIRF	ChemBio Incident Response Force
CENTCOM	Central Command
CEO	Chief Executive Officer
CINC	Commander-in-Chief
CJCS	Chairman, Joint Chiefs of Staff
COTS	Commercial Off-the-Shelf
DASD	Deputy Assistant Secretary of Defense
DCS	Deputy Chief of Staff
DepSecDef	Deputy Secretary of Defense
DIA	Defense Intelligence Agency
DoD	Department of Defense
DOTMLP	Doctrine, Organizations, Training, Materiel, Leadership, Personnel
DPG	Defense Planning Guidance
DSB	Defense Science Board
DTRA	Defense Threat Reduction Agency
DUSD	Deputy Under Secretary of Defense
EFX	Expeditionary Force Experiments
FTS	Future Total Force
ISR	Intelligence, Surveillance, and Reconnaissance
JCS	Joint Chiefs of Staff
JROC	Joint Requirements Oversight Council
JTAMDO	Joint Theater and Air Missile Defense Organization
JTF	Joint Task Force
JV2010	Joint Vision 2010
M&S	Modeling & Simulation
MCCDC	Marine Corps Combat Development Command
MOE	Measures of Effectiveness
MOUT	Military Operations in Urban Terrain
NDP	National Defense Panel
NGO	Non-Government Organization
NWDC	Naval Warfare Development Center
OMFTS	Operational Maneuver From the Sea
OPTEMPO	Operations Tempo
OSD	Office of the Secretary of Defense
PACOM	Pacific Command

PPBS	Planning Programming and Budgeting System
QDR	Quadrennial Defense Review
R&D	Research and Development
RBA	Revolution in Business Affairs
RFPI	Rapid Force Projection Initiative
RMA	Revolution in Military Affairs
ROE	Rules of Engagement
S&T	Science and Technology
SecDef	Secretary of Defense
SOCOM	Special Operations Command
SPACECOM	Space Command
SPMAGTF	Special Purpose Marine Air Ground Task Force
TOR	Terms of Reference
UAV	Unmanned Aerial Vehicle
USA	United States Army
USACOM	United States Atlantic Command
USAF	United States Air Force
USCENTCOM	United States Central Command
USD	Under Secretary of Defense
USMC	United States Marine Corps
USN	United States Navy
USPACOM	United States Pacific Command
USSOCOM	United Stated Special Operations Command
USSPACECOM	United States Space Command
WRAP	Warfighting Rapid Acquisition Program