

Acquisition Reform: Implications For Procurement, Force Structure Planning, And Warfare

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**Acquisition Reform:
Implications for Procurement, Force Structure
Planning, and Warfare**

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ABSTRACT

Future conflicts will increasingly rely on technologically innovative weapons and weapon systems to deliver coercive force, both lethal and non-lethal, offsetting the effects of a shrinking force structure. Declining budgets for Research and Development, Procurement, and Sustainment demand a seamless integration of the civilian and military communities in order to field effective systems. The limited remaining funds within the Department of Defense (DoD) budget requires coordinated allocation efforts for the development and procurement of force multiplying weapons and systems. These weapons and systems, in turn, must be of adequate quality and quantity for use, when required, by the warfighter. The implications of acquisition reform on procurement and ultimately on the ability of U.S. forces to achieve Operational Objectives that satisfy National Strategies are significant. Optimizing the size and shape of future U.S. forces will be paramount in our ability to project forces abroad and provide credible coercive capacity. Acquisition reform may provide the only source of discretionary capital in future defense budgets.

This paper examines the current trends in acquisition reform. The work attempts to evaluate the strengths and potential pitfalls of the reforms as they affect procurement, the development of force structure, and that force structure's coercive capacity into the next century. Key issues for this future are acquisition reforms dealing with the use of commercial best practices, the elimination of nonessential regulations, the initiation of the pilot/lead programs, and the High Gear and Lightning Bolt Initiatives. Central to this review is the ultimate impact on Operational effectiveness of U.S. forces.

Table of Contents

DISCLAIMER	i
ABSTRACT	ii
<u>TABLE OF CONTENTS</u>	iii
<u>LIST OF TABLES</u>	iv
<u>HISTORICAL ACQUISITION</u>	1
PERSPECTIVE	1
<u>WHY ACQUISITION REFORM</u>	6
POLITICAL INCENTIVES	7
MULTIPOLAR THREAT	10
TECHNOLOGICAL SURPRISE	10
<u>WHAT IS ACQUISITION REFORM</u>	12
KEY POINTS	12
WHAT REFORM MEANS TO INDUSTRY	14
WHAT REFORM MEANS TO THE FORCE	15
FIRST STEPS	16
<i>Pilot/Lead Programs</i>	17
<i>Lightning Bolt Initiatives</i>	17
<u>IMPLICATIONS FOR FORCE STRUCTURE</u>	18
EARLY REFORM SUCCESSES	18
COMMONALITY	19
CAPABILITY	21
FORCE STRUCTURE	25
<u>WARFARE CONCLUSIONS</u>	29
POSITIVE DIRECTION	29
BENEFITS	30
RISK	30
COURSE OF ACTION	31
<u>NOTES</u>	33

List of Tables

TABLE 1: JOINT DIRECT ATTACK MUNITION	18
TABLE 2: GLOBAL POSITIONING SATELLITE (GPS)	19
TABLE 3: MILSTAR	19
TABLE 4: POTENTIAL REFORM SAVINGS(CONSTANT FY96\$)	28

Historical Acquisition

Your Fathers' Process for Supplying the Forces

Perspective

Historically, the United States has always attempted to finance its defense in the cheapest way possible. In the past, with vast oceans and relatively benign neighbors, the U.S. could afford to indulge in a little "splendid isolation." America's greatest expenditure on defense occurred during World War II when she spent 39.2% of gross domestic product (GDP) and 89.5% of the federal budget on the war effort. The height of the Cold War with the USSR only saw a 7% American expenditure on defense.⁽⁹⁾ By comparison, America spent very little both before and after events like WW II, Korea, Vietnam, and Desert Storm. In 1940 the U.S. spent 1.7% of GDP on the military and had come back down to 3.7% by 1948, only slightly less than we spend now. That downward trend continues with an estimated 2.9% of GDP expenditure forecasted for the year 2000.⁽¹³⁾

Though spending comparatively smaller amounts on defense than the old USSR and other nations, the U.S. possesses a distinct advantage. While other nations pursued "quantity" America pursued "quality" in her military arms. This fascination with technology is uniquely American, likely the result of our social and culture growth during the 19th century. America came of age in a land of plentiful resources with enough land area to inspire mechanical innovation and transportation. One other advantage that superior technology provides to military personnel is its strength as a force multiplier. Technological quality not only enhances lethality but improves the likelihood of saving the lives of our own combatants. Minimizing casualties is

important not only to the "grunt on the ground" but to the American people. They provide the consensus and financial support to wage military action abroad. With the above perspective in mind, it is important to quickly review some of the pertinent aspects of funding the development, procurement, and sustainment of weapon systems during the most recent 50 years of our democracy.

Prior to World War II the U.S. spent a mere fraction of its GDP on defense. America's military forces were little more than a peacetime shell a perfectly acceptable situation to the average American, who saw peace as normalcy and war as an aberration. Americans were certainly aware of the European fighting and the aggression of the Third Reich. However, in their "splendid isolation" they barely acknowledged the growing presence of Japanese hegemony in the South Pacific and dismissed the European's war as not pertinent to the United States. Still in the recovery phases of the Great Depression, America had little incentive to contribute any portion of its wealth to defense. President Roosevelt's efforts to clandestinely resupply the American military (and the British and Soviet forces) did not rest only on his broader view of American moral responsibility to the world community at large. Roosevelt invested in defense because he saw the risk to U.S. security and interests that a hegemonic Third Reich would present after the fall of Great Britain and the Soviet Union.

America's decision to invest in defense is generally based on two broad reasons. First, in response to a perceived wrong, a cause that "spikes" the public interest, or second, when the cost of conducting a military operation, in either men or materiel, becomes too great. In the first case, World War II was a crusade, spurred initially by the "sneak" attack on Pearl Harbor, the event that provided the socio-cultural focus of the WW II U.S. war effort. Once committed,

America was determined to eliminate fascism from Europe and to punish the Japanese. We embarked upon a uniquely American crusade that started from almost nothing in terms of military capability.

Korea provided yet another example of an American crusade, this time to fight the evils of monolithic communism. The U.S. started from nearly nothing with very few aircraft and even fewer pilots to fly them. American garrison forces in Japan were woefully undermanned and under-gunned, lacking manpower, training, and equipment. The result was the nearly complete rout of the U.S. and Republic of Korea forces from the Korean Peninsula by a third rate power.

The second general reason, excessive cost in men and materiel, for American investment in defense technology in wartime is best illustrated by the Vietnam conflict and the Cold War with the Soviets. The implications of technological enhancement became an ever greater part of the military experience. Excessive losses in the *Rolling Thunder* bombing campaigns of North Vietnam were the result of not only bad tactics but the increasing difficulty of accurately striking targets in hostile environments. The difficulties in target destruction led to the development of electro-optical and laser guided weapons to dramatically improve the lethality of munitions and the effectiveness of the delivery sorties. Against the apparently overpowering quantifiable buildup of the Soviet Cold War military machine, America chose to back quality as the offset. The Cold War with the Soviets provided the opportunities to test the individual national military-industrial complexes by the use of third party surrogates during events like the Israeli-Arab conflicts of the 60s and 70s.

Historically, the biggest drawback to the free-market defense industry has been the length of time required to identify, develop, produce, and deliver weapons and systems to the

warfighters. The average new munition, Maverick, Sensor Fused Weapon, or Tri-Service Standoff Attack Missile (TSSAM) can take upwards of ten years to develop and field. More importantly, some weapons and systems, like TSSAM, expended large amounts of money (@\$7B for TSSAM), materiel, and time only to be canceled before completion due to developmental problems. The result of such developmental failures is an identified warfighter need or capability that remains unfilled more than ten years after it was identified.

Aircraft and ships, due to their complexity, fair no better in the cycle time problem. The average aircraft, fighter or multi-engine, can require up to 15 years to complete the cycle from need identification of requirement to fielding of the system. The average for a U.S. Navy carrier has been as long as 20 years. As we approach the 21st century and technology doubles approximately every 18 months these development times obviously fail to yield responsive capability to new technology and threats.

The more notorious reasons for these long cycle times, until very recently, were the substantiation of future needs versus capabilities, the complexity of regulatory oversight, and the inconsistency of federal funding. The length of the cycle time itself makes it difficult to define a required need. Before the "need" for a program can be identified and validated there must be a "substantiated" threat or mission. The difficulty therefore arises in attempting to forecast the threat or mission environment some 10 to 15 years in the future. The "catch 22" mentality of which comes first, the "need or the threat" is painfully apparent. Secondly, a complex functional oversight system has developed to ensure that competition is protected and fraud is prevented. While the intentions are honorable, the resulting complexity and convoluted nature of the documentation yields a stack of regulations that require years of review per program and full

employment for a host of lawyers. Third, the inconsistency in federal funding leads to program delays and schedule slips that raise the cost of the item and prevent delivery of adequate assets in a timely manner. Both the Department of Defense and the Congress have played "political football" with year to year funding allocations to satisfy parochial interests. As a consequence, American industry is reluctant to make the capital investment required to produce items at economic order quantities or to provide future surge capacity. With little certainty as to the final procurement quantity, or even the ultimate completion of any contracted weapons buy, it is extremely difficult to spend the stockholders' profits in potentially non-profit enterprise.

Why Acquisition Reform

Declining Defense budgets continue to restrict force structure and the military's ability to equip, train, and fight. Acquisition Reform has the potential to either facilitate combat effectiveness or destroy it, depending upon how the reforms are implemented in the acquisition of new technology weapon systems. In a September 1995 address to the Regional Commerce and Growth Association in St. Louis, Secretary Perry presented his view of reform and its value:

....Acquisition reform is very difficult, but it is also very important because it will save money that we need to pay for our modernization program in the future.

....acquisition reform is not just about saving money. It is the only way to get the technology our military commanders need and the technology that will give us a decisive edge on the battlefield...

Specifically, Acquisition reform can substantially enhance the development, potential lethality, and availability of our future force structure. For example, the rapid development of enhanced/smart munitions will provide greater flexibility in aircraft delivery profiles. Improving delivery capability and enhancing effectiveness of both the platform and the weapon can dramatically improve the effectiveness and survivability of the aircraft. If we can indeed achieve the goal of "one weapon, one aircraft, one target" then the decrease in attrition and wear on the aircraft and crew will provide handsome dividends. Acquisition reform also directly influences the cost, schedule, and performance of future weapons and their utility in future force structures.

However, acquisition reform is meaningless if it does not enhance the delivery of a needed weapon system at the right place, at the right time, for the right cost. Failure to understand both the strengths and weaknesses of acquisition reform will seriously jeopardize our ability to effectively achieve strategic and operational objectives in the future. Military capabilities that satisfy National Objectives are the ultimate goals we seek to provide the National Command Authorities, not just the development of technology for technology's sake. The expenditure of *any* dollars on technologies that can be obtained quickly but fail to address a specific military need or capability contribute in a negative sense to the nation's defense. Mismanagement or misunderstanding of the acquisition streamlining policies being enacted today can potentially yield inadequate resources for future force applications. A "cutting edge" technological force that is *not relevant* to the achievement of National Objectives is at best a gross miscarriage of the public trust.

Political Incentives

Traditionally, in times of peace the U.S. conducts the business of statesmanship with emphasis on the domestic aspects of the democracy. As Alex Roland observed in his monograph, "The Technological Fix: Weapons and the Cost of War,"

"Today's prince may well believe that business is the first business of the state, followed perhaps by social welfare, the environment, public utilities, and the like. In times of military emergency, princes still give war the attention it deserves."

Without a credible and palpable threat the American people tend to see war as an aberration and are unlikely to invest in a military structure that looks beyond the U.S. borders. The expenditure of U.S. wealth, whether materiel or the lives of our sons and daughters, requires the full

conviction of the American public. The challenge for the future is twofold. One, to define the required military capabilities that the U.S. will need in the next 15 to 20 years. Second, convince the American public of the relevance and value of those capabilities to their future well being.

The fall of the Soviet Union led most Americans to believe that "windfall" surpluses would be forthcoming from the shrinking of America's military. Political pressure on elected officials to identify and reallocate those surpluses is as great as any effort in the last 50 years. The public perceives the key benefit of defense reductions as the reinvestment of scarce dollars in domestic issues and shortfalls, with a resultant increase in Government services and added protection of safety nets like Social Security. The net effect of that political pressure resulted in a comprehensive review of military roles and missions and the ensuing conscientious effort to downsize America's military structure.

The disconnect arises, however, at the national level between National/Political and Strategic Objectives and the means to achieve them. There has been no commensurate decrease in the use of U.S. military force to match the decrease in the military's sustainment budget. Indeed, the U.S. military finds its Operational tempo increasing in the areas of Peace Keeping, Peace Enforcement, and Military Operations Other Than War. Additionally, when the application of destructive military force is required there is a requirement for precise firepower application with minimized collateral damage and loss of life. These evolving requirements, roles, and missions present the DoD with both weapon and doctrinal requirements that cannot be met without greater efficiencies in procurement.

Further complicating the issue is the DoD policy of maintaining force structure as well as maintaining the modernization accounts. Secretary Perry has already expressed concern over the potential shortfalls in military readiness, as a result of funding cuts. He has striven to maintain readiness through downsizing the infrastructure and cutting modernization expenditures in the short term. The modernization cuts could be offset by the selective retirement of older equipment and maintaining a force proportionate to the remaining force structure and threat. The ability to endure that hiatus in modernization is now at an end and the nation must begin to invest in the future again.⁽¹⁹⁾ The proposed payment strategy is a three pronged approach of increasing the DoD budget, savings on the infrastructure of closed bases, and acquisition reform. If that strategy fails, and the first two options certainly do not hold a great deal of promise, then acquisition reform will be the sole source of additional DoD funding. Garnering all the potential benefits of reform is essential in order to maintain an effective, though smaller force.⁽¹⁶⁾

Finally, commensurate with the decrease in budget and military structure there is a decrease in the level of Research and Development. Not surprisingly there is an increase in efforts by commercial business to divest themselves of defense production dependency. Two key items to the success of the U.S. in the Gulf War, significant R&D and commercial investment incentives in the late 1980s, are being removed from the procurement system in record time. As an example, Air Force RDT&E declined by 30% in constant FY95 dollars between 1986 and 1995.⁽¹³⁾ Historically, in the pre-1993 Acquisition system, a promising research program could take up to 10 years to field a useful system. The implication of this decline in R&D spending is that the full impacts of decreased R&D investment will only become apparent in the post-2000 time frame when we may need the new technology most.

Multipolar Threat

Today's American no longer sees the "evil empire" of the Soviet Union. Therefore, it's difficult for the average taxpayer to understand why he or she needs to invest in defense, while the U.S. is perceived to be the "biggest dog on the block." What we in the military have failed to do is convey the simple reality that the breakup of the Soviet Union has led to a *less not more* stable world. Today there are on average more than 54 different civil wars, revolutions, insurgencies, and violent revolts (major and minor conflicts) going on around the world.⁽¹⁴⁾ Those Americans who are aware that conflicts exist are uncertain as to why America should be involved in those conflicts or why she should care at all. While CNN may be able to stir moral and ethical involvement, it is intellectually difficult for many Americans to see a connection. Quite often, what the average American fails to realize is that many of those warring nations possess the capability, or have access to technology, that is capable of directly influencing US. interests or inflicting serious damage on the U.S. proper.

Technological Surprise

The need for continued investment in education and R&D is readily apparent with the acknowledgment that the world's total knowledge base doubles approximately every 18 months. Technology renewal is even more imperative, as military technology replacement occurs every 50 years but technology itself changes every 10 years. According to Mr. Stephen Conner, President of Lockheed-Martin, the U.S. still has the best weapons but it is using technology procured in the 1980s. Both the knowledge and technology cycle times have been decreasing throughout the 20th century. America needs to recognize that broad based educational opportunities exist around the world and that it is very Amero-centric to believe that technological surprise can exist only on U.S. soil. Dramatic technology breakthroughs occur on

a daily basis around the world. This becomes bluntly apparent when the number of U.S. Nobel recipients is contrasted with those from around the world. Our failure to fund R&D efforts, in the name of short term cost savings, has the potential for dramatic shortfalls in capability after the turn of the century.

An additional concern is the ever increasing distribution of ex-USSR researchers and scientists. Many of these talented individuals have taken up free agent status and work throughout the world for the highest bidder regardless of political or philosophical affiliation. In the cash strapped Russian economy the reasonable assumption is that many of the former Soviet technicians have already leapt at the opportunity for employment. Anecdotal reports of the outright sale of technology and systems to nations or groups with the most money abound. in the search for cash a continuing "truth" is that political orientation is not necessarily a deterrent to business or an indicator of allegiance.

What Is Acquisition Reform

Just the Facts Please...

Key Points

Recognizing the need to become a partner with industry, the DoD must eliminate the barriers influencing the way we traditionally do business. Three specific barriers must be removed: the unique contracting procedures we use, the military-unique process and product specifications we impose on our contractors, and unique security procedures. Not only do these barriers separate us from commercial technology but they impose substantial costs on our system.⁽¹⁰⁾ While this is not the first time that these barriers have been identified or proposals made to modify them, it is the first time that commitment to buying into the reform process has existed from the Executive Branch down through the Congress.

One of the key improvements is the delegation of program control to the Program Executive Officers (PEOs) through the approval process. Program delegation to the PEO should have the effect of significantly decreasing the cycle time and enhance the probability that a program will not fall victim to requirements creep. The Army is most aggressive with delegation of all programs below Acquisition Category (ACAT) I to the PEOs, followed by the Air Force with ACAT II and below, and finally the Navy with ACAT III programs delegated to the PEO. Along with a decrease in senior leader oversight, Defense Contract Management Command has taken steps to reduce the in-plant oversight by way of Industry Teams and Process Action Teams to identify cost drivers for elimination. The intent is to decrease the in-plant oversight to the

level of contract monitoring instead of active involvement with the plant floor and corporate management.

One of the most significant inhibitors to the effective use of the acquisition system is the raft of Federal Acquisition Regulations (FARs) aimed at ensuring accountability. Additionally, those FARs were intended to ensure the competitive process was protected in government purchases. Unfortunately, what the FARs eventually created was a bureaucracy of incredible complexity. Rather than ensuring accountability and competition, they provided protection for those companies who could afford contract lawyers, not those most in need of competition protection. The Acquisition Reform Acts of both 1994 and 1995 have undertaken to remove or limit many of the most restrictive FARs in the acquisition system. Accompanying that reform has been the extraordinary efforts by the Under Secretary of Defense for Acquisition and the PEO offices in seeking regulatory relief. That regulatory relief is essential in order to achieve greater efficiencies in program definition, management, and procurement. Notable regulatory relief successes include the Joint Direct Attack Munition (JDAM), Wind Corrected Munitions Dispenser (WCMD), Joint Primary Aircraft Trainer (JPATs), and Space Based Infrared Radar System (SBIRS).

Probably the most costly regulations dealt with the application of MILSPECS to the procurement of government equipment. Action taken by Secretary Perry over the past year has successfully removed the MILSPEC requirement and opened the procurement system to a complete overhaul. Tremendous savings are already being realized by the use of Commercial Best Practices and standards for military equipment design and development. By encouraging

private industry to "find" solutions to satisfy military capability requirements rather than specifying system design both cost and cycle time are being dramatically reduced.

Though dramatic improvements have been made within the acquisition system, the public perception of the defense department is still largely negative. The Council for a Livable World and Taxpayers for Common Sense published a recent report ([The Pentagon Follies](#)) citing examples of \$29 billion in wasteful programs. Examples of waste in the report include the \$5.1 million golf course (the **third** golf course) at Andrews AFB, the \$2,187 C-17 door hinge (should cost \$31), and the cancellation of programs like TSSAM and the A-12 that did not meet performance specifications.⁽²⁰⁾ These are rare examples of fraud and waste, most brought to light by military personnel and corrected immediately. The public perception, however, of government contracting is that it is rife with excess and quite possibly fraud and corruption.

What Reform Means to Industry

In comments to the Contract Management Association, Secretary Perry laid out his view of the two primary focuses for U.S. industry. First, the consolidation of the defense and national commercial industrial base. A required merger since the decrease in size of the defense industrial base by as much as two-thirds from its 1986 level will leave that industrial base insupportable by its own means. Second, the integration of the significant technological advances made in the commercial sector. Rapid pursuit of technology is essential to the nation's combat capability. The Defense industry no longer produces the advances in critical technology that it did 10 to 20 years ago. Defense now comprises less than 5% of the critical technology incentive base. In order for defense to benefit from the commercial leadership it needs to eliminate inherent structural roadblocks.⁽¹⁰⁾

The DoD needs the private sector industry to become involved in dual use technology. Without dual use technology operations the military industrial base will disappear with resulting dire consequences for the U.S. military. The adoption of dual use technologies provides the monetary reward (obvious key to private sector interest) to industries willing to take the lead in technology adaptation and development. Leaner, more aggressive businesses will be able to optimize their capital investment serving both private sector and government customers.

Commercial Best Practices exercised by the private sector will dramatically improve the efficiencies of the surviving military suppliers. Benefits accrue not only from improved technical application but from streamlined management and reporting procedures. The current trends greatly reduce the governmental oversight and reporting requirements and therefore reduce the cost of contract execution.

What Reform Means to the Force

The military is being asked to define "the required military capability" not what the system requirement is supposed to be. Ms. Colleen Preston, USD(A&T), is the driving force behind this philosophical change in how we define our future needs. What the concept really means is that the military departments need to tell industry "what the military needs to do" not what this or that system requirement is and what it should look like. The intent is to allow the Innovativeness of industry to develop the novel, creative, cost effective solutions to military needs. The freedom of action provided private industry encourages the pursuit of "new solution avenues" to future military problems. Rather than pursuing an evolutionary course of action to satisfy a military requirement, industry is being told to "be revolutionary" and get inside the combatants "OODA Loop." Only by getting inside the military's 10 year program, "Observe,

Orient, Decide, and Act (OODA) Loop" can America hope to remain competitive with global technology.

Acquisition Reform should provide not only the opportunity to accelerate program acquisition but also to acquire programs with proportional lethality to support future military mission requirements. Where required, the process, should have the ability to procure weapons and systems with much greater or lesser lethality to respectively meet MRC or MOOTW level conflicts. Not only lethal but non-lethal systems will be developed through cooperative technology teams and the empowering of both military and civilian "creative thinkers" to arrive at solutions that address "required military capabilities." Anticipating the increased tempo of Peace Keeping and Peace Enforcing actions, U.S. forces will be challenged routinely to apply varying degrees of lethality. While the military must always be prepared and capable of delivering extremely lethal sanctions, they must also be able to work at the other end of the spectrum using non-lethal methods and tactics. Successfully making the paradigm shift from system requirements to capability driven acquisition will open the flood gates of creative, non-traditional thought.

First Steps

Already, the first steps in moving the acquisition system towards a more flexible, robust system have been taken by senior civilian and military leadership. The Secretary of Defense and his office have made radical changes in the way FARs are developed and applied. Many of those FARs have been discarded after being found to be either nonproductive or actually counterproductive in the development of new systems. The Joint Chiefs of Staff have

reinvigorated the Joint Requirements Oversight Council (JROC) and put "teeth" into the process of determining program value prior to any expenditure of funds.

Pilot/Lead Programs

Programs with demonstrable value to the military's mission of defending the United States have been given special status as Pilot/Lead Programs. These programs are intended to be streamlined in all phases of the acquisition system. The end result should be the rapid acquisition of beneficial systems and the lowest possible cost in the shortest possible time.

Lightning Bolt Initiatives

The Lightning Bolt Initiatives are another evolution in the development of rapid acquisition programs sponsored by Secretary of the Air Force, Widnall and Chief of Staff of the Air Force, Gen Fogleman. The initiatives will streamline the acquisition community, bringing about a "cultural" change in the way the DoD does business. In total, eight Air Force initiatives were proposed in Spring 1995; of those, I believe three are particularly notable. First, the elimination of excessive System Program Office (SPO) manpower, reducing their size by at least 50%. Reduction in staff not only reduces the size of the organization but eliminates much of the "busy" work imposed by staffs. Second, the removal of all extraneous regulations with the exception of Secretariat, Air Staff, and HQ Air Force Materiel Command (AFMC) acquisition policies and guidelines. The key benefit here is the elimination of redundant, excessive, and often contradictory instruction and documentation. Finally, the elimination of all but the most essential documentation and the creation of a Single Acquisition Management Plan (SAMP). If this document can be scrubbed down to only those documents required for program execution, eliminating all of the self-interest and self-serving reviews required today by OSD staffs protecting their "rice bowls", then real reform is possible in program management.

Implications for Force Structure

A Stronger Leaner Force or a Shallower more Ineffective One?

Early Reform Successes

Though "true" reform is still in its infancy, there have been some excellent successes. For example, the Joint Direct Attack Munition (JDAM) has dramatically improved its cost and procurement profile, as illustrated in Table 1 below. Additional benefits from the JDAM program include the reallocation of saved funds to the acceleration of the B-1 bomber upgrade program. JDAM funds applied to that program will accelerate the aircraft's capability to deliver JDAM and other accurate munitions by more than two years. The reallocation of "saved" JDAM funds is a key example of the potential benefits of acquisition reform. Two other examples, shown in Table 2 and 3, are the GPS modernization, and MILSTAR program respectively.

Table 1: Joint Direct Attack Munition

Measure	RDP (Aug 93)	Oct 95
MILSTDs/SPECs	87	0
SOW to SOO (pages)	137	2
CDRLs	243	29
Warranty	5 Years	20 Years
AUPC (\$FY95)	\$68K	\$18K
SPO Size	70	63 (96/1) -40(96/4)
Development Funds	\$380M	\$310M
Development Time	46 Months	30 Months
Production Time	15 Years	11 Years
Production Savings	0	\$1.5B

Current as of 13 December 1995

Table 2: Global Positioning Satellite (GPS)

Measure	From	To
SPO Size	145	90-38% Reduction
Contracts/Contractors	16	1
New Generation Delivery Schedule	8 Years	5 Years
Program Savings	0	\$80M

Current as of 13 December 1995

Table 3: Milstar

Measure	From	To
CDRLs	126	51
MILSTDs/SPECs	110	43
Government Acceptance Events	301	1
Program Savings	0	\$236M

Current as of 13 December 1995

Commonality

Dramatic reductions in the size of the DoD have contributed perhaps more than any other event to the development of common systems and tools. Whether those systems were munitions or aircraft, the budget reductions of the past few years have forced the services to seek out common systems that can be procured at reduced cost. Joint programs provide significant opportunities to drive down costs by combining buys of common use electronics, equipment, or "core" systems.

Declining real budget authorizations and allocations demand that the military departments join with each other and business in the development of new systems. No longer

can the departments act in their own self-interest in developing weapons systems with peculiar systems designs that are not transportable to other missions. Though final system design may be different to suit service "roles and missions" the core systems can be developed and procured in more economic quantities. The Joint Strike Aircraft (formerly Joint Attack Strike Technology (JAST)) is an excellent example of an end item system that will be "fleshed out" to meet USAF, USN, and USMC peculiar capabilities. Only through the combination of funding authorizations will the DoD be able to incentivize industry to develop and secure the capital investment required for the production of new systems. Dual use technologies are also essential for the improvement of our present and future systems. The mass production of Trimble GPS navigation sets for general automotive use, coupled with a flexible shop floor to produce ruggedized military units, represents the best of both worlds. Finally, the development of timely, requisite technical capability to engage the full range of potential threats that we will face over the next 10 years cannot be achieved without the synergism of dual use technologies. As Deputy Defense Secretary John White stated:

“When it comes to modernization, DoD is not out there all by itself. We 're not the dominant buyer in this economy any more. We are not creating new industries as we were in the '50s, '60s, and '70s. We 're going to have to go out and find out what other people do in the commercial world.”⁽²¹⁾

Common equipment items, based on the concept of commercial dual use technologies, will significantly improve the logistics support of the combined military departments. Common avionics, instruments, testers, lubricants, etc. that can be used by any of the military departments or the civil sector will go a long way toward decreasing the number of instances of lost

effectiveness due to spares shortages. Readiness based on dual use technologies and on common parts and supplies will yield in-commission levels unheard of in previous decades. Also, as the DoD continues to pursue privatization as a means of cutting cost, dual use items will ease the transition from one support system to another. Finally, the issues surrounding prepositioning of equipment on foreign soil could be somewhat mitigated since the total "foot print" of supplies and parts would be reduced. Only that number of spares required for support of a single joint organization would be required, not three or more for the separate and distinct military departments. The reliance on host nation support could be enhanced since our prepositioned stocks would be even less disruptive to those nations, who have socio-cultural conflicts with the West.

Capability

Rapid changes in an uncertain world will require DoD to quickly redefine the shape of its forces. Off-the-shelf hardware and software, if it can be obtained rapidly and economically, will provide the revolution in military affairs required to dramatically reduce system cost while enhancing combat capability. The potential improvements in joint operations by way of common and compatible systems will dramatically enhance our capability to operate effectively and exercise command and control of our forces. On the other hand, we have the potential for disaster as well, if we fail to achieve the required reforms in acquisition or we reform but fail to procure the correct items to remain a relevant force.

If we fail to achieve the degree of reforms sought, then we will be trapped in a bureaucratic morass that will prevent our military services from executing the missions assigned by the NCA. As an example, given a "technology lock" at the Milestone I Decision point and an

18 month technology turnover cycle a new aircraft design may not be worth the investment by the time it is fielded. A ten year acquisition cycle for an airplane means that the technology, avionics and aerodynamics, is at least "six iterations" old by the time the aircraft reaches Initial Operationally Capability (IOC). The potential for adversary nations or consortiums to get inside our "acquisition OODA loop" is significant.

The companion negative, to the above, is the development of a new technology system that does not fully take into account the availability of technology globally. Failure to stay ahead of the global technology OODA Loop could result in a system with the potential for defeat by non-industrialized but technology aware forces. The complex nature of our systems sometimes makes them vulnerable to the rogue state with nothing more than adequate money to buy the technologically literate. Not only must our technical systems be competitive with those that are commercially available, they must be proportionally better in order to maintain our edge.

Strategically, U.S. forces are able to define needed "capabilities" that support the National Military Strategy, which achieves the National Security Strategy. This will be a joint effort between industry and DoD to develop and deliver the needed equipment and technology. Ideally, the definition of requirements will be top-down driven in order to be used as the guideline for the development of new systems that yield capabilities requisite in the National Military Strategy. With successful effective acquisition reform there should be no question as to whether a system does or does not provide the "actual" capability required. New capabilities will provide the National Command Authorities the ability to enforce a National policy with a "credible capacity to coerce" whenever and wherever required.

At the operational level the services should be able to optimize the requirements for joint operations. The greater the efficiencies the greater the likelihood that we will be able to tight the two nearly simultaneous MRC scenario. Common warfighting systems with multi supporting logistics interfaces will provide dramatically improved capability to apply military force. Systems with common elements will decrease the "tooth to tail" ratio and provide more effective placement of forces by the theater commander. The decreased "tooth to tail" ratio also eases the burden of maintaining force structure at the expense of end strength (more trigger pullers) and the load on the "lift" requirements to embark the required halting forces. As systems and spares become more common the logistics cost in inventory and lift will also exhibit cost savings.

Finally, at the tactical, joint forces will realize the synergistic effects of common, mutually reinforcing systems. Common subsystems combined into service systems will provide the complex "net" required to saturate a combat AOR with the requisite force. Supporting those common systems with common industrial grade parts and testers will relieve the service of some of the combat service support responsibility and allow for a greater percentage of "trigger pullers."

In concert with the change "tooth to tail," perceived lethality requires considerations at one aspect of a "capacity to coerce." The decrease in the size of the force means that fewer platforms and personnel are available to do the job required. It is already apparent that we need to ramp up the lethality of our weapons and systems to maintain that level of "coercive capacity" we enjoyed just five years ago. In those instances where we are required to exercise lethal force we must do it quickly and with minimal risk to our own forces. As mentioned above, we also

need to be able to employ force at the other end of the spectrum and terminate a conflict quickly and with minimum casualties and destruction to all parties. Only by use of robust technology acquisitions can we hope to achieve these "cross spectrum" lethalties. Massed fires and the thousand plane raids of World War II are long a concept of the past; today it is one bomb, one aircraft, one pass.

Acquisition reform also has the capacity to improve not only our weapons and systems but to increase the survival of those systems. Examples of long term programs that could benefit from dual use of commercial software and hardware production techniques are the self defense and navigation/weapon tapes of our aircraft, ground vehicles and ships. As the force structure goes down and the military industrial complex goes into minimal sustainment, the husbanding of remaining force structure becomes imperative. Software intensive navigation and weapons delivery tapes currently take three to five years to develop and release to the users. More extensive use of commercial products, development tools, and mechanization could yield more responsive and robust systems. Guidance technology for military weapons and vehicles, allowing employment of weapons from much greater distances with enhanced delivery and accuracy, directly contribute to decreasing combat losses. In the two MRC scenario, significant attrition in the first MRC means you can't do number two!

Finally, at least two direct benefits should derive from the acquisition reform process for the military departments. First, the cost of ownership of weapons should decrease as weapons and systems become more common. Common end items that demonstrate both service and commercial heritage will be far less expensive to procure and maintain. Life cycle cost savings of volume production of items that satisfy both civilian and military sectors will by their nature

drive cost down. Second, the responsiveness and capability of the forces should improve. As the cycle times of procurement decrease, the likelihood of improved technological response with a credible capability will increase. The actual conduct of operations should not yield any technological surprise from any potential adversary. Additionally, decreased cycle times and commonality between departments improve the opportunities for joint operations and mutual support on and off the battlefield. Finally, the most essential benefit derived from acquisition reform is the ability to provide the nation with a robust military capability. As modern forces become more capable in their capacity to achieve operational and tactical objectives, it will be possible to more realistically swing forces to engage on a near simultaneous MRC.

Force Structure

The nearly unanimous position of most analysts and military leaders is that the force structure of the DoD will continue to shrink over the next five to ten years. Dramatic cuts in both budget authority and operating budgets have already taken place with the resulting decrease in procurement and the diminution of spares and reserves. Already there are cries from numerous "think tanks" about the "hollow force" of the 90's. As cited earlier, R&D and procurement dollars are continuing to vanish from the budget as the military services reallocate funds in an attempt to maintain the current readiness levels and execute the assigned mission taskings.

As military budgets continue to shrink toward the 2% of GDP that has been America's historic (pre-1950) average for defense spending, the question becomes what kind of force can we afford? The challenge is to avoid the "hollow force" of the post-Vietnam era. In testimony to the Senate Armed Services Committee, Maj. Gen. McCloud advised that the Air Force will be

"1.5 to 1.6 wings short of combat coded aircraft by 2010."⁽¹⁸⁾ Additional shortages in both numbers and modernization are becoming apparent in F-16s, F-15Cs, B-1, B-2, E-3 AWACS, and E-8 Joint Surveillance and Target Attack Radar System (JSTARS) aircraft. Army Division and Navy Fleet and Carrier shortfalls are also beginning to take their toll on readiness and capability. While the force makeup will be very dependent upon the mission presented in the National Security Strategy of the United States and the military strategy to execute it, there are avenues that can enhance the flexibility of that force structure.

Given that weapons systems will be more complex, acquisition reform, whether for a platform a munition or individual soldier must be pursued as aggressively as possible. Without dramatic changes in the way we do business it will be impossible to maintain the force, much less modernize it. Reform that brings the best technology to the fight, at the least cost, in the quickest manner possible will be essential if we are to maintain any relevance in world affairs. If we can apply the same reform strategies to other systems that have been applied to the examples listed above, imagine the possibilities. Across the board savings may give us the opportunity to at least hold on to our present capability.

Within budget (FYDP) JDAM saved more than \$1.5 Billion dollars, accelerated its delivery schedule and provided funding to develop, buy spares, racks, and field guided munition capability on half the long range bomber fleet (B-1 capability accelerated two years). The JDAM cost bogey was cut by more than 50% from its initial program office estimates (those based on approved pre-1992 acquisition costing concepts) when compared to the final contract award. Assuming the F-22 cost approximately \$70M per aircraft and only a 10% savings per

aircraft could be realized (commercial parts, elimination of excessive regulation and oversight), that would yield in excess of \$2.8B over the procurement contract of that system alone.

Applying procurement savings to the budget as a whole over the FYDP might provide us the capability to maintain our current combat forces, at their current state of readiness, and perform some modernization as well. An essential given in this exercise is that “good, aggressiveness program management” by the services is rewarded. Savings cannot be automatically taken from the military budgets and applied to other “domestic” or “DoD” programs. The current systems generally does not reward the services for doing “the right thing.” Air Force Secretary Sheila E. Widnall pointed out that “Our modernization accounts are continually being raided to pay for other programs within DoD.” Having made the force-structure cuts to fund modernization, “we must now stand up to the budgetary challenges to keep those modernization accounts intact.”⁽¹⁸⁾ In order for the services to pursue reform, they will need the same kind of incentivization as corporate America. For example, in Table 4 below, using only the 15% savings line, by the year 2000 we could potentially save \$18B in combined O&M and Procurement savings in that year alone. Applying that savings to the potential DoD budget would dramatically improve our chances of maintaining force readiness and allowing for at least moderate modernization programs. While those are small budget numbers, they represent the kinds of numbers being estimated for the DoD budget by the year 2000.⁽¹³⁾ Finally, can we get better than 15% savings? Absolutely, Defense Secretary Perry and Ms Darlene Druyun, USD(A), are on record as suggesting that between 20% and 40% of a weapon systems cost could be saved by acquisition reform.

Table 4: Potential Reform Savings (constant FY96\$)

	1995	1996	1997	1998	1999	2000
Budget Estimates	279.7	261.1	249	239	236.3	236.1
O & M	94.3	91.9	92	90	88	86.2
Procurement**	45	44.8	39.4	37.8	36.2	34.7
Total O & M and Procurement	139.3	136.4	131.4	127.8	124.2	120.9
Reform Savings***						
5%	7.0	6.8	6.6	6.4	6.5	6.0
10%	14.0	13.6	13.2	12.8	13.0	12.0
15%	21.0	20.4	19.8	19.2	19.5	18.0
25%	35.0	34.0	33.0	32.0	32.5	32.0
Gross Domestic Product****	7360	7469	7545	7710	7876	8141

Notes: * Estimated (Decrease by 2%/year after 1997)

** Estimated (Decrease by 4%/year after 1997)

*** Combined O & M and Procurement Savings

****Estimated Gross Domestic Product

Would that allow any real growth to the force structure? Not likely, but with commensurate end strength reductions, streamlined headquarters and chains of commands that emphasize "trigger pullers" it appears quite possible to hold our "coercive capacity" at the DESERT STORM level. Readiness could remain at present high levels and modernization funding would be available to offset selective retirement of older systems. In a world where we are not likely to find the proverbial "peer competitor" to give us a DESERT STORM type of battle, we may find ourselves capable in small unit Peace Keeping/Enforcement operations. Capability to execute the two MRC scenario may still be in doubt due to the final end strength figures that result from the next Bottom Up Review, however, the synergistic effects of acquisition reform should give our forces the technological edge.

Warfare Conclusions

Positive Direction

Acquisition reform will provide both positive benefits and direction to existing and future military force structure. Decreased regulation and delegated program authority will make the acquisition system more responsive to the needs of the military and the nation. The restructure of the acquisition system is absolutely essential if the services are to remain ready and able to execute the National Military Strategy in support of the National Security Strategy of the NCA. The elimination of department "rice bowls" by way of common allocation of available scarce resources will enhance the strategic, operational, and tactical application of all the service forces. The final elimination of service parochialism's will yield a robust military capability with operational potential across the spectrum of conflict.

Teaming with industry, the empowerment of both industry and military managers and warfighters will yield significant improvements in the availability of technology for the achievement of National Objectives. Dual use technologies will enhance sustainability and responsiveness of the combined "military-commercial" industrial complex. The advent of military-industrial partnerships with the expectation of reasonable corporate profits will act as an incentive to industry to pursue high payoff projects that have manageable risk. Research and Development that is directly transferable between the military and commercial sectors will once more be pursued as good business investments, Not only do we incentivize the private sector but we add to the potential technological energy of the nation to our military capability.

Benefits

The key benefit will be the ever increasing “capacity to coerce” of our military forces, despite decreases in the force structure of the nation. This capacity to coerce will result from the synergistic effectiveness of improved joint interoperability and sustainability of U.S. military forces. Improvements in commonality, capability and cost effectiveness will allow the U.S. force structure of the next century to continue to project robust military forces around the world. Properly applied technology, smart weapons and systems, will improve the survivability of our combat systems. Improved survivability will decrease the number of exposures to hostile threats and thereby extend the life of the systems and the force. Finally, if technological improvement is a given, what the U.S. must guard against is technological surprise. Acquisition reform and streamlining will decrease the cycle time required to develop and field new systems, thereby “lead turnings” any potential adversary and mitigating the technology part of the equation. By remaining within the technological OODA Loop we can respond successfully to those technological surprises that do occur.

Risk

Some of the risks involved in acquisition reform revolve around the potential to misidentify the desired end item. Though the likelihood of misidentification will be minimized with an active military-civilian team intent on identifying the required military capability, it will still be possible to select items that may not entirely meet the users need. Care must be taken to assure that cost “as an element” of the procurement process receives the appropriate weight and is not inadvertently placed above capability during severe budget shortfalls. Cost is obviously a key decision element but it is not the only one.

Additionally, the delegation of supervisory authority and the reduction of program management teams will eliminate much of the apparently needless oversight that programs have endured in the past. That reduction could however, allow the dreaded "requirements creep" if that delegated authority cannot maintain adequate perspective in the acquisition process and allows itself to get so close to the trees it loses sight of the forest. Key to avoiding that potential is quality training a committed military-industrial team with a solid understanding of the military capability desired.

Lastly, one of the biggest risks of acquisition reform could arise from the planning of force structure based on the assumption that a dual use technology is readily transferable to the military. An example would be the wide use of commercial "castings" technology for private sector components. This technology was not suitable for the complex military shapes required to produce a weapon like TSSAM. This was a key technology for the reduction of long range force structure on the assumption that smart, standoff weapons would be available in a given time frame. The system pushed technology from the civilian sphere to the military to satisfy a perceived military need. If that technology does not meet the requirements for weaponization or arrive on time (TSSAM is the perfect example) in the quantities required, then that technology dependent force structure will not be effective. Conceivably, the U.S. could end up with a force structure to the achievement of the national objectives and strategies.

Course of Action

Acquisition reform is a necessity if the U.S. military is to continue to possess a "credible capacity to coerce" into the next. Century. Reduced budgets resulting in reduced force structure an industrial base, demand that military and commercial interests team up in order to provide

the robust core industrial base required for future operations. The chosen "course of action" will have positive results if allowed to execute to its fullest extent. However, it will be a long and arduous journey based on the entrenched corporate, public, and governmental perceptions and inertia surrounding established acquisition protocols.

The entire process of acquisition reform requires close attention and course correction to ensure that the U.S. does not fall hostage to its own commercial technology. U.S. military forces cannot be allowed to lose the initiative in world affairs due to failed coercive legitimacy. As technology continues to develop at breakneck speeds the potential benefits and risks of complex military systems must be constantly evaluated to ensure "mission viability." The DoD organizations exercising legitimate control over the reform process must be prepared to change course when change is required in order to ensure combat capability for U.S. forces. We must not allow the development of a "reformist elite" that develops its own "rice bowl" mentality at the altar of acquisition reform with its accompanying entrenchment.

Finally, it is imperative that the military-commercial team recognizes that the final test of any reform process will be the ability of the military forces of the country to effectively satisfy the National Military Strategy and achieve the National Security Strategy of America. To do less would be criminal, as the results of an End/Means mismatch, in the world arena, would be disastrous for America.

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