Improving Weapons Acquisition

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Introduction

The procurement of weapons for our armed forces has traditionally been an issue left to "the experts." However, as the build-up in defense expenditures approaches the trillion-dollar level — the largest in peacetime history — more and more questions have begun to be raised about whether taxpayers are getting their money's worth. Issues range from whether we are buying the right systems — highlighted by the controversy surrounding radios that did not allow the Army to talk to the Navy during the Grenada conflict — to the glaring newspaper "horror stories" about weapons that don't work and grossly over-priced spare parts, coffee pots, and hammers. With the deficit rising dramatically and the perception of chaos and corruption in defense procurement increasing, defense expenditures have begun leveling off and congressional and executive branch attacks on the defense industry, fueled by the press, have risen in intensity. Meanwhile, efforts have been made by the Pentagon to shift public attention away from government management issues and to questionable actions said to have been taken by suppliers; these have given many the impression that acquisition management has become primarily an issue for auditors and lawyers.

Congress has attempted to address the situation by issuing hundreds of new procurement reforms aimed at correcting the apparent abuses. Many claim that this legislative whirlwind has reached the level of absurdity. For example, under Senate Bill 1958, introduced on December 17, 1985, "no funds appropriated to or for the use of the Department of Defense (DoD) may be obligated or expended for the procurement of any plastic toilet cover shrouds, identified as

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toilet assembly #941673-101, at a unit cost in excess of $125.00.”

Additionally, Congress has involved itself more and more in the detailed management of each and every one of the more than two thousand defense budget line items, annually changing more than half of them in one way or another and requiring for many others that detailed studies be done by the DoD and submitted to Congress. Thus, instead of “getting government off the backs of industry,” the trend has been toward increased auditing (by the General Accounting Office, the Inspectors General, and others) and greater regulation of defense contractors.

Fortunately, paralleling this mainstream focus on “fraud and abuse” there has been a broader, and far more important, increase in concern about “waste.” This is essentially a new look at the effectiveness and efficiency we realize from our defense dollars, and at the broad structural changes that are needed to increase the cost-effectiveness of our expenditures. At the beginning of the Reagan Administration, the Defense Department recognized the need for such changes and took the lead in initiating reform. The so-called “Carlucci Initiatives” were a set of acquisition reforms proposed by then-Deputy Secretary (now National Security Adviser) Frank Carlucci and aimed at correcting many of the historic abuses in the procurement system. They focused on increased long-term efficiency through such changes as greater program stability, improved production management, and establishment of greater realism in the estimation of program costs. While suggesting highly desirable changes, such proposals ran up against the traditional way of doing defense business and were hard to implement, especially in an environment in which everyone was in a hurry to make short-term “fixes.”

By the end of President Reagan’s first term, however, the movement towards broad structural reform had gained momentum. The need for change permeated all levels of the DoD, including the Office of the Secretary of Defense, the Joint Chiefs of Staff, and the military services, as well as the defense industry. All of the major DoD processes were affected, including the requirements process, for weapons selection and specification; the planning, programming
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and budget process, for resource allocation; and the procurement process itself. It is on this broader set of changes that we must now focus.

I. Background

In early 1985, a bipartisan report on the findings of an independent, eighteen-month study on defense organization was released, emphasizing the need for broad structural change. The members of the study panel included representatives from Capitol Hill, as well as many former Defense Department officials and military leaders, such as General David Jones, former Chief of Staff of the Air Force and former Chairman of the Joint Chiefs of Staff; General Edward Meyer, former Chief of Staff of the Army; and Admiral Harry Train, former Commander-in-Chief of the Atlantic Command. Additionally, the recommendations of this study were endorsed by six former Secretaries of Defense who, in their introduction to the report, stated that “[t]here are serious deficiencies in the organization and managerial procedures of the U.S. defense establishment.”

This study was followed by the release of a similarly detailed investigation by the Senate Armed Services Committee. This also recommended broad institutional changes; it was supported by a bipartisan coalition led by Senators Goldwater and Nunn. On the House side, Representative Les Aspin (Chairman of the Armed Services Committee) initiated a far-reaching set of hearings on a wide range of defense procurement and management issues. Finally, in February of 1986 the President’s Blue Ribbon Commission on Defense Management (the so-called Packard Commission, named after its chairman, industrialist and former Deputy Secretary of Defense David Packard) released its set of preliminary recommendations on defense reorganization and procedural changes.

Again, the focus was on broad, structural changes in the acquisition process itself rather than on the narrower issue of fraud and abuse. The recommendations centered on the need for a new planning and budgeting system, significant reorganization of both the Office of the Secretary of Defense and the Joint Chiefs of Staff, and

6. PRESIDENT’S BLUE RIBBON COM’N ON DEFENSE MGMT., INTERIM REPORT TO THE PRESIDENT (Feb. 1986) [hereinafter PACKARD INTERIM REPORT].
major changes to be initiated by both Congress and the DoD in the acquisition process as well as in specific weapons management and buying practices. The Packard Commission continued to issue reports over the next four months (including an "Acquisition Report" in April and a "Final Report" in June), and its recommendations received wide support from both the executive and legislative branches.

Naturally, such calls for and attempts at making extensive change in the way the DoD does business are nothing new. In 1958, President Eisenhower attempted to develop a more unified military structure; the institutional resistance of the various services prevented much of this from happening. Similarly, during the Kennedy Administration Secretary McNamara endeavored with his famous "Planning, Programming, and Budgeting System" to get some control over resource allocation. Again, the system resisted such long-range, integrated efforts, favoring instead the shorter-term, more parochial view of "let's get a program started this year, and we'll worry about next year when it comes." Most recently, in an attempt to control the dollars in an annual defense budget that is now approaching $300 billion, Congress switched to a four-cycle annual budget process. This cycle includes budget committees, authorization committees, appropriation committees, and the sequestration process. Even most members of Congress will acknowledge, although unofficially, that this system is overburdensome and could use significant improvements; some have even begun to speak out publicly.

Congress and the executive branch are faced with a choice. They can continue their attack on fraud and abuse, through greater regulation, stepped-up auditing, and yet more congressional hearings; alternatively, they can shift the debate to the higher plateau of broad, structural reform in the way the Department of Defense will do business over the coming years. Fortunately, it appears as though the emphasis is shifting toward the latter approach, addressing the more significant issues of where billions of dollars can be saved and additional billions redirected to strengthen the nation's

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defense posture more effectively. Many members of Congress, as well as the President and the Secretary of Defense, have begun to implement the needed changes. The Goldwater-Nichols Act on Defense Reorganization\(^9\) (which Senator Goldwater said on his retirement in September 1986 was the most significant thing he had done in all his years in Washington) and the President’s directive to the DoD to implement the Packard Commission’s recommendations—even if it goes against the system—are but two examples of the movement toward change. Perhaps this time it will happen!

Obviously, this article argues for the broader, more significant approach to change. However, the argument comes with a warning: it is possible to go too far, seeking change for its own sake and thereby throwing away the good with the bad. One after another, independent studies comparing defense management with the management of other government agencies at federal, state, and local levels have found that the Department of Defense is one of the best managed—if not the best managed—of all government agencies.\(^10\) This is easy to see when defense overruns are compared with those occurring in other agencies’ major projects. For example, Defense horror stories pale in comparison to cost, schedule and management problems encountered in the building of mass transit systems, congressional office buildings, superdomes, and so forth. For this reason, while making necessary and dramatic changes in the way Defense conducts business, it is important not to ignore the many important lessons we’ve learned in buying defense weapon systems over the past forty years. Nonetheless, there is much room for improvement, as the following discussion of current problems makes quite clear.

II. Problems in the Acquisition Process

There are essentially four main adverse trends which must be reversed if the DoD is to get its money’s worth and public confidence in the management of defense spending is to be restored. These are (1) increasing problems with the choice of weapon systems; (2) rapid growth in the cost of defense equipment; (3) lengthening of the acquisition cycle; and (4) growing problems in the U.S. defense industrial base. Each of these four trends is discussed below; the subsequent section outlines the changes necessary to counter them.

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A. Increasing Concern About the Choice of Weapon Systems

There is a widespread perception that the existing institutional structure of the Department of Defense does not provide for the selection and development of the most cost-effective weapons. This concern is evident, for instance, in the extensive debates over the past several years regarding the $20 billion requested for 100 MX missiles to put in the old Minuteman silos, a second $20 billion for 100 B-1 bombers to fill the gap until the Stealth bomber enters the inventory, and a third $20 billion for two additional aircraft carrier task forces for possible use against Soviet land forces. The issues are not whether these weapon systems are desired, but rather whether they represent the best way (among many possible alternatives) to spend $60 billion in enhancing the nation's security, and even more importantly, how these spending decisions should be made. Similarly, there has been much debate over, but again, no clear consensus on, the allocation of incremental defense funds. For example, should a 600-ship Navy, more Army units, or more Air Force fighter wings have the highest priority? The difficulty of these questions of strategy — and the resultant weapon selections — is compounded by inter-service rivalry for resources. It is further complicated by the fact that technological change offers the opportunity to make revolutionary shifts in the composition of the military forces. Such shifts could multiply relevant military capabilities, if the new technology could be absorbed by the affected military institutions. However, proposals for this kind of dramatic change often fall into ambiguous areas outside of the accepted, traditional service equipment and missions. It is difficult for the armed services to accept such proposals, in a cultural sense, because doing so would mean that long and ingrained traditions would have to be altered or scrapped. For example, the Navy might be able to carry out major portions of its mission of denying use of the surface of the seas to an enemy by using reconnaissance satellites and land-based missiles rather than ships. But such an idea is so foreign to traditional notions of naval operations that it, like similarly novel ideas, receives little attention. Instead, we continue to concentrate on building improved versions of traditional platforms: ships, planes and tanks. Moreover, the armed services insist that each item of equipment be

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the “best possible.” This insistence is one of the factors leading to the second of the adverse trends.

B. Rapid Growth in the Cost of Defense Equipment

The U.S. clearly has kept its military equipment at the forefront of the technological state of the art. The cost of this improved performance, however, has been increases of around 6 percent per year in the unit price of each new generation of equipment.\(^2\) The cost of a single ship is currently measured in hundreds of millions and even billions of dollars, an individual plane in the tens or even hundreds of millions, and each new tank in the millions.\(^3\) Under any realistic projection of resources likely to be made available for defense, if unit costs continue to increase, the nation will be able to buy fewer and fewer weapon systems each year.

The armed forces have historically been too optimistic in estimating the cost of weapon systems, especially when first requesting funds for system development. The hope has been either that costs will, in fact, be unexpectedly low, or that more money will become available in the future. More cynically, some suggest that unrealistically low cost estimates reflect a bureaucratic tactic of getting the development program started but leaving the problem of how to pay for it to those in office in later years. Indeed, as weapons are actually developed and procured, far too often their realized costs have been significantly higher than the initial estimates. The historical average of this program cost growth has been between 50 and 100 percent of the original cost estimate of each weapon system.\(^4\)

Naturally, if there are only a certain number of dollars available for buying a given system and its cost doubles, we can afford to buy

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\(^2\) An increase of 6% per year is arrived at even after adjusting for inflation, as well as for the higher unit price associated with the reduced quantities typically purchased today. See Defense Systems Acquisition Review Counsel Working Group, Final Report: Weapon Systems Costs (1972); see also J.S. Gansler, The Defense Industry 16 (Figure 12) (1980).

\(^3\) The Navy recently estimated the cost of one aircraft carrier at $3.4 billion. Washington Post, Oct. 26, 1986, at A21, col.5. An F-15 fighter costs approximately $38 million and a B-1B bomber well over $200 million, in 1985 dollars. (The Air Force has committed approximately $20.6 billion for 100 B-1B bombers, in 1981 dollars.) And each M1 tank, for instance, costs around $2.4 million.

only half as many. While the U.S. has been buying more and more capable weapon systems, then, the result of both types of cost growth (from generation to generation, and between initial estimates and final price tags) has been the purchase of fewer and fewer systems each year. For example, in the 1950s we bought around 3,000 fighter planes each year; in the 1960s, the number purchased declined to 1,000 per year; and in the 1970s, we were down to buying only 300 fighter planes per year. Norm Augustine\[15\] has pointed out that a continuation of this trend would result in our building one fighter plane per year in the year 2054. Even with outstanding individual weapon performance, there is still a minimum quantity of weapon systems which is absolutely critical for the successful completion of any military mission. Maintaining this minimum becomes even more important as the Soviet Union steadily improves the quality of its weapons while still maintaining equipment stocks and production rates that are very high compared to American defense numbers. Thus, these cost-induced reductions in the quantity of U.S. weapon purchases could be devastating. Compounding this problem is the next of the undesirable acquisition trends.

C. The Lengthening of the Acquisition Cycle

The increasing complexity of modern weapon systems contributes significantly to the lengthening of the timespan from initiation of development to completion of production. However, two other even more important causes of delay are: (1) stretchouts of the acquisition cycle resulting from an increasingly burdensome and indecisive managerial and budgeting process in both the executive and legislative branches; and (2) stretchouts resulting from program cost growth and budget reductions. It used to take five to seven years to acquire a weapon system, but new systems now often take twelve or even fifteen years to move from exploratory development to initial deployments in the field.\[16\] Even after development is complete, the high cost of each weapon dictates that only a few production units can be purchased each year. This means that the deployment of any significant number of a given weapon is still further delayed. The lengthening acquisition cycle thus has a com-

\[15\] Norman Augustine, President of Martin Marietta and former Undersecretary of the Army, is the author of AUGUSTINE'S LAWS, first published by the American Institute of Aeronautics and Astronautics, Inc. in 1982. A newer, expanded version was published in 1986 by Penguin Books.
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pound effect on the military. First, it results in a decline in America's technological advantage over the Soviets, since most of the systems deployed in the field by the U.S. are older designs. Second, the longer cycle itself reduces efficiency in the acquisition process, which results in still greater unit costs and still lower quantities. Adding to these undesirable weapon system acquisition trends — and to a considerable extent caused by them — is the fourth of the adverse trends.

D. Increasing Problems in the U.S. Defense Industrial Base

With the long-term decline in rates of production, one would expect to see the industrial base drying up. In fact, during the dramatic shrinkage in defense procurements in the early 1970s, the large prime contractors remained in business by building equipment at very low rates, for instance one aircraft per month in extreme cases. At the same time, subcontractors and suppliers of parts simply disappeared. Later — during the buildup of the Reagan years — they were often replaced by foreign suppliers, particularly in many critical electronics areas. A series of reports in late 1980 all indicated that significant problems had developed in the U.S. defense industrial base. These studies identified areas of substantial inefficiency for normal operations in peacetime, as well as critical bottlenecks (for instance, in selected essential parts and production equipment). The inefficiency and bottlenecks resulted in an almost total lack of capability to respond rapidly to any emergency condition with a surge in production.

Interestingly, America's national security strategy was partly the cause of this declining industrial responsiveness. After World War II, the United States shifted to a strategy and military force posture that relied very heavily on U.S. nuclear superiority to deter war in any form. Under this strategy, the U.S. ability to mass-produce huge quantities of weapons rapidly, as during World War II, was no

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17. From 1969 to 1975, the annual procurement account dropped from $44 billion to $17 billion (excluding inflation effects). See J.S. Gansler, supra note 12, at 12, fig. 1.1.
20. For example, it was reported that it would take over three years for an existing aircraft production line to increase its output significantly.
longer considered an important element of America's strength. Beginning in the 1960s, however, as the USSR began to acquire strategic nuclear parity, the threat of a U.S. nuclear response to a conventional attack became less credible as a deterrent to war. For this reason, the U.S. shifted to a strategy of "flexible response," planning to respond to conventional aggression with conventional weapons, while maintaining nuclear weapons as a deterrent to nuclear attacks and for "first use" if conventional defenses fail. To prevent the U.S. from being forced to employ nuclear weapons, however, the conventional warfare portion of this strategy requires greatly increased investments in modern, expensive conventional weapons (investments we have been reluctant to make) and/or a heavy reliance on U.S. industrial responsiveness. We must be prepared to beef up the relatively small peacetime standing forces in the event of crisis.\textsuperscript{21} But improving industrial responsiveness also requires money, which compounds the squeeze on available acquisition funds; successive U.S. administrations have therefore been reluctant to take significant steps in this area as well. The result is that our current national security strategy is not matched by a corresponding military or industrial capability.

Reversing these four undesirable acquisition trends can be accomplished neither quickly nor easily. The complexity and magnitude of the defense acquisition system does not lend itself to simple solutions. However, partly out of frustration and partly to respond to the public and press clamor for corrective actions (brought on more by the headlined revelations of $400 hammers, $900 stool caps, and $600 toilet seats than by the above-noted adverse trends in defense procurement), quick fixes have been the approach pursued by both Congress and the DoD. For example, last year Congress considered over 150 different defense procurement reform bills; many of these would, in fact, have been counterproductive and even self-contradictory. Meanwhile the DoD, to correct the "spare parts problem," hired literally thousands of people. The Air Force alone added over 3,000 people just to check spare parts prices. The net result of this "fix" was to double the processing time for ordering spare parts and to actually decrease force readiness. Another example of the mismatch in resources is the fact that the DoD now has 30 to 40 percent of the government's plant representatives and auditors checking on spare parts, which actually represent only 3 to 4

\textsuperscript{21} For a fuller discussion of this strategy shift, see Gansler, \textit{Industrial Preparedness: National Security in the Nuclear Age}, 75 \textit{Military Engineer} 483-490 (1983).
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percent of the total DoD acquisition dollars. Clearly, attention must be focused on the large-dollar items (the weapon systems) rather than on the small-dollar items such as spare parts costs, if significant impacts on defense procurement are to be realized. The small-ticket items, unfortunately, are the ones that appeal to the press, so they have received a disproportionate amount of attention.

III. Needed Changes

If these significant and undesirable trends in the Department of Defense's acquisition practices are to be reversed, four main changes are required. In order of priority, these are: (1) improved long-term resource allocations and weapon system selections (there's no value in properly buying the wrong systems); (2) improved stability in programs and budgets (how can you possibly manage efficiently if the programs, and the dollars allocated for them, are continuously changing?); (3) a shift from the current system that regulates quality and costs to one that creates natural incentives for higher quality and lower costs (it's harder to get people to do things right by directive, than if they want to do them by choice); and (4) greater emphasis on the importance of the health and responsiveness of the defense industrial base (its role as a vital part of our national security must be recognized and steps taken to revitalize the "arsenal of democracy"). These four changes are closely interrelated; all four are required if there is to be significant change in the defense culture and in the way DoD does its business, and if the above-noted adverse trends are to be reversed to any significant extent over the coming years. To see what is required, we must look at each of the four in greater detail.

A. Improved Methods of Allocating Defense Resources and Establishing Weapon System Requirements

Traditionally, weapons and other equipment are selected almost entirely separately by each military service, acting independently.22 The Army, Navy, Air Force, and Marines each choose the systems that appear best suited for their unique, historical missions, according to their own perceptions of requirements. In this way, the armed services design the structures of their forces almost as if they

22. PACKARD FINAL REPORT, supra note 7, at 43. The independent service resource planning and weapons requirements process is there discussed at 44-48.
intended to fight independent land, sea, air, and amphibious wars. As President Eisenhower emphasized in 1958 and military experts still agree, future battles will be fought with integrated forces. Clearly, weapons and equipment should be selected to complement one another, so as to maximize the combined capabilities of the armed forces.

Unfortunately, those who have the responsibility for planning how wars will be fought — the Chairman of the Joint Chiefs of Staff and the Commanders of the Unified and Specified Commands (CINCs) — do not develop weapon requirements, or approve the selection of weapon systems, or establish the priorities for resource expenditures among the various competing demands. The sole responsibility for imposing some coherence upon the uncoordinated procurement programs of individual services has been assumed by the Office of the Secretary of Defense, with frequent “advice” from Congress through the budget process.

Unified military resource and equipment planning would require a strengthened Chairman of the Joint Chiefs and an organization (and staff) more independent of the services, as was suggested (although not implemented) by President Eisenhower in 1958. Long-range, mission-area resource plans would be generated (based on guidance from the Office of the Secretary of Defense and total dollar levels established by the President) that would make more effective use of the total resources available. Additionally, these integrated plans could take better advantage of the changes in technology that are now available, but that currently result in considerable overlap in the traditional roles and missions of individual services. Such long-range plans, closely tied to military mission future needs, would place an “affordability constraint” on deciding which future weapon systems would be developed and procured, and in what numbers. The Chairman would also recommend a military strategy that would be tied to these resource plans, a link which, many have noted, is currently missing. Such a plan would not only have the military making explicit trade-offs between quantity and quality but would also require explicit trade-offs between dollars for force modernization and dollars for force readiness (trade-offs that are more difficult today, when the Operating Commanders do not make explicit trade-offs between quantity and quality).

23. This explains why, as noted above, in the Grenada incident in 1983, the radios of the Army and Navy operated differently, prohibiting the needed direct communication among them during the conflict.
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have a strong voice in spending decisions but the advocates for new weapons are well represented).

Much of this recommendation is contained within the movement for reform of the Joint Chiefs of Staff ("JCS reform").

However, many of the JCS reform proposals tend to emphasize exclusively the military chain-of-command issue, for example, how to get decision-making authority down to a local field commander through an incredibly layered military structure. (The Marine barracks disaster in Lebanon has been attributed to our failure to solve this problem.) Reform proposals must be expanded beyond the military chain of command to include the issue of resource planning. If properly implemented, these reforms would significantly strengthen the role of the Secretary of Defense. He would have far greater assistance in integrating military planning, including aid from the Chairman of the Joint Chiefs of Staff, the CINCs, and the more independent staff of the Chairman of the JCS. Similarly, reform would make clear the specific role of the services, which is limited by law to organizing, equipping, training, and supporting their respective forces.

Many of these specific changes are contained in the above-noted Goldwater-Nichols Act on Defense Reorganization, passed in September 1986. The overall effect of the changes in this Act, when and if it is fully implemented, would be to shift towards centralized decisionmaking and decentralized implementation. The decisionmaking (on weapons, resources, and strategy) would be done much more on an integrated multi-service basis, although the individual services would have full authority and responsibility for the execution of the weapon system developments and procurements as well as their subsequent support. A long-range, integrated, resource plan (generated by the Office of the Secretary of Defense and the Chairman of the Joint Chiefs of Staff) would then form the basis for the second of the needed defense acquisition reforms.

B. Greater Program and Budget Stability

The United States is one of the few nations in the world, if not the only one, to run its defense establishment on an annual budget cy-


Single-year defense budgets encourage the services, the administration, and Congress to meet annual total budget limits by simply pushing everything out to "next year," that is, stretching out the purchases of most weapons over several additional years — a decision which is far less difficult politically than actually cancelling an entire weapon program. Such stretchouts are shortsighted, as they force contractors to produce equipment at inefficient rates of production, causing higher unit costs and the ultimate procurement of fewer systems overall. For example, the three-year production stretchout of the F-15 aircraft in the mid-1970s resulted in a two billion dollar increase in program costs (excluding the effects of inflation). Eighty-three fewer fighter aircraft were purchased than would have been possible for the same dollars, had the original plan been adhered to.

Thus, Congress could make a very significant contribution to controlling procurement costs by adopting a multi-year defense budget. Two- or three-year budget cycles would introduce the greater stability necessary for contractors to plan more efficient production rates and lower the unit costs of new systems. Furthermore, the stability of multi-year budgeting would encourage the use of multi-year procurement contracts — a far more efficient technique. Finally, and most important, multi-year budgets would encourage the Defense Department and Congress to consider more carefully the long-term fiscal and strategic implications of procurement decisions. Naturally, multi-year budgets could be reviewed at any time in case of changes in political or economic conditions.

It is encouraging that some members of both the Senate and the House have recently introduced bills for a biennial budget process wherein a two-year defense budget would be established during the first year of the new Congress; it is also encouraging that the Department of Defense has fully supported this initiative. In fact, for the government's fiscal year 1988, the Department of Defense submitted such a two-year budget to Congress. But a two-year congressional budget still meets much resistance on Capitol Hill — for obvious political reasons.

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26. For a discussion of the defense planning process in many other countries, see Reorganizing America's Defense: Leadership in War and Peace (R. Art, V. Davis, & S. Huntington eds. 1985); see also J.S. Gansler, supra note 12, at 244-256.

27. A detailed discussion of schedule stretchouts, their effects, possible corrective actions, and the specific F-15 example is contained in Affordable Acquisition Approach, supra note 14.

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A second beneficial congressional reform would be to reduce the number of committees involved in the Defense budget process. In 1983, Defense Department witnesses testified on the 1984 budget before 96 committees and subcommittees; 1,306 witnesses provided 2,160 hours of testimony. These redundant hearings are time-consuming for both Defense management and for Congress, and focus extensive attention on the details of the budget rather than on the more important policy issues. Additionally, the many small changes that result from this process — over 1,000 line items are changed each year — introduce great instabilities into defense programs and create added uncertainty about future funding levels and schedules. An Air Force study estimated that savings of 20 percent could be achieved, after a few years’ time, by stabilizing the Department of Defense budget. Congressional reforms would help to make these savings possible — but again, such reforms are currently meeting active resistance.

The Defense Department also could help achieve greater budget stability. The Department must begin by recognizing how much it hurts itself by not making realistic estimates of total program costs. Historically, the probable significantly higher cost associated with the risk of developing new, advanced-technology weapons has not been included in most initial estimates, because potential price tags look far more attractive without these contingency dollars added on. Such optimistic initial estimates are a problem at all levels of the Defense Department, as well as in Congress. There is no question, however, that there are major uncertainties in the development of weapon systems, and that cost-multiplying factors to cover these risks must be included if prices are to be estimated realistically. There is also no question that this is a management issue, not an issue of right and wrong estimates. Clearly, realistic program cost estimates are critical to the achievement of stability — and therefore efficiency — in the defense acquisition process. Low estimates always result in cost growth and stretchouts later on. Naturally, if realistic program cost estimates were used, the result would be fewer programs in the total budget. Because, due to each program’s high cost, there has already been a significant reduction in the number of new programs getting started, this added step would make the critical decisions on which weapons to procure that much more impor-

29. Oral Presentation by Vincent Puritano (DoD Comptroller), University of Kentucky (Dec. 2, 1983).
30. For a discussion of the effects of instability, see AFFORDABLE ACQUISITION APPROACH, supra note 14.
tant. However, each of the programs that survived could be managed more efficiently; and, in the end, a great deal more equipment could be bought for the same amount of money.

One technique that the services have recently begun implementing to achieve greater stability is called “baselining.” This involves writing an internal agreement, between the program manager and his service, on each program. For example, the Air Force is now trying to discipline itself to operate within the $20.6 billion estimate for 100 B-1B aircraft (to help it achieve this objective, the figure is being monitored closely by Congress). A baseline has been signed — and if revisions are required, will be re-signed — which establishes a commitment, at the very top levels of the service, to all of the key parameters of the program, including performance, annual budgets, quantities, schedules, support plans, and operational plans. Traditionally, no such commitments have existed, so the services have felt free to change their minds frequently, on both program requirements and budgets. This creates turmoil and instability in programs, and allows industrial suppliers to operate flexibly on contract costs even if the original contract had been a fixed price contract. Underlying this concept of baselining is the assumption that the service program manager is given sufficient authority to reject changes that come in from other staff areas. It would also be of great help to the effective management of these programs if Congress were to grant DoD greater budget reprogramming authority, thus allowing for necessary managerial flexibility.

Inherent in the concept of program stability are two basic requirements, neither of which has been followed very well in the past. First: never start a program until you’re ready. That is, don’t initiate full-scale development unless the technology has already been demonstrated, firm requirements have been established, the program’s likely cost is understood, and relevant operational concepts have been settled. Second: recognize that, historically, a commitment to full-scale development is a commitment to production. No programs have been cancelled by the services after full-scale development has begun, and very few have been cancelled by any other authority, either in the executive or legislative branches. So subsequent years’ dollars must be available for production (an “affordability” test) and all the planning done early on, to have a

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smooth transition from development into production. Proper production planning must be done well in advance to achieve the desired efficiency of production operations. Such planning and commitments would allow both efficient production rates and efficient multi-year contracting.

The first two reforms in defense procurement — improved planning and selection of weapon systems, and stability in programs and budgets — are the highest priority. With these two reforms in place, it would then become possible to manage each weapon procurement program far more efficiently and effectively. However, the additional two reforms discussed below are also necessary for real efficiency. The combined effect of all four will achieve the needed overall “cultural change” in the way defense carries on its business.

C. Shifting from Regulations to Incentives in Order to Achieve Higher Quality and Lower Cost Equipment

Here we come to the area of specific procurement reforms — the types of measures with which most discussions of “getting more bang for the buck” normally start. In this case, there are two choices. The first choice is for the defense industry to become a totally — and officially — regulated industry. In this case, a plethora of new laws and regulations would be issued, covering every detail of defense costs and decisionmaking. The alternative is to create a new environment, one in which the government and its contractors have natural incentives, such as promotions, profits, increased sales, and professional pride, to be efficient in weapons procurement. The result of such incentives would be that government and industry managers would actually want to figure out ways to improve the quality and lower the cost of their products. Such market incentives are normal in the commercial world; however, as will be seen below, they rarely exist in defense procurement today. They must be created, in order to achieve the necessary change. Consider the following ten specific techniques for creating the natural incentives needed for improved efficiency and effectiveness of defense resource management.

1. Enhanced Professionalism

Experienced government managers are crucial to the successful acquisition of new multi-billion dollar, high-technology, high-risk weapon systems. Incentives must therefore be created for DoD to retain, and, even more importantly, to promote effective military
and civilian personnel in the agencies that manage the acquisition process. Historically, such stability and rewards have not existed. For the military, promotion potential has lain elsewhere, in operational positions such as squadron commander or ship captain. Rotation rates are high in acquisition-management billets, and inexperience, or even no experience, is common. In recent years, however, the Air Force has made some significant strides in the right direction, and in 1985 Navy Secretary Lehman directed that 40 percent of all future Admirals must come from the acquisition community. Similar upgrading of status and promotion potential is also required on the civilian side. The first and most obvious step is a reclassification of procurement personnel from "administrative" (essentially clerical) to "professional" categories. This would entail a number of corresponding changes in requirements regarding education, training, and experience. Until the personnel system is fully reformed on both the civilian and military sides, it will be difficult to recruit and retain the most capable and experienced people in the acquisition process. It is unlikely that effective management can be achieved without such changes.

2. Increased Program Management Authority

Over the years, "cults" of technical specialists (for data requirements, military specifications, schedule control, and so on) have proliferated on the staffs of the services and of the Secretary of Defense, and have acquired extensive authority. A program manager is told exactly what he must have in his program by, for example, the "competition advocate," the "reliability expert," the "logistics expert," and the "military component specification expert." Because each of these many individuals has veto power over a program, the program manager must agree to meet their diverse requirements if he wants his program approved — regardless of the costs. In addition, in order to "sell" a program on up the line, the program manager must go through innumerable sets of reviews by management and staff at higher levels. Often over forty sets of briefings will be held for one decision on how the program will be run. A look at either commercial programs or well-run defense programs shows that what successful programs all have in common is a strong program manager — one with full authority to get the job done, and with the full support of those senior to him who can force the system to allow it to happen. By contrast, defense management "layering" has built up to such a point that in some cases it is nearly impossible

for anything to be accomplished. For this reason, in 1985 Navy Secretary Lehman took the dramatic step of eliminating a whole layer, or organization, by removing the Chief of Navy Materiel and all of his supporting staff of hundreds of people. This also had the desirable effect of eliminating much of the even larger staff on the next layer down, whose principal job had been supplying data to the eliminated upper layer. Lehman also streamlined the reporting chain from the program manager directly upward. Program managers were thus given both the authority and the responsibility associated with their job, and were free to manage in the most effective and efficient fashion practical within the limits set by program dollars. This kind of streamlining is an essential step in more effective acquisition management.

3. Continuous Competition

In the non-defense world, the continual availability of some form of alternative — competition between two or more suppliers for the same product, or between at least two different products for the same need — is the normal context of business. Such competition ensures continued effective incentives to lower costs and improve performance. By contrast, the normal approach for the Department of Defense is to have only an initial ("one-shot") competition for the engineering development of a weapon system. The winner then becomes the sole firm to build that particular equipment for the many years of the program's life. Thus, an F-15 fighter can only be bought from McDonnell-Douglas, and no other aircraft will do the same job as the F-15. The thousands of subsequent technical and program changes required by the government are then bid in a monopoly environment, making even the initial competitive bid on the contract less than useful. All subsequent contracts for the weapon system in question, especially major production contracts, are also bid on a sole-source basis over the next ten to twenty years. The DoD must figure out ways to shift from this sole-source environment to some form or forms of continual, competitive alternative. In the commercial world, if one supplier raises his prices significantly, the buyer simply switches to another; in the DoD world, with only one supplier of a badly-needed weapon system, the only option is to buy fewer systems this year and the rest a few years later — at even higher prices.

33. For example, on the F-111 aircraft program there were a total of about 394,000 changes.
While continuous competition may not always be practical due to the importance of economies of scale (for example, having two firms building nuclear aircraft carriers might not be cost-effective), most of the time it is. Certainly, the fostering of competition should always be considered and striven for. Where it is not possible or practical at the weapon system level, continual alternatives can be used for critical subsystems. The emphasis here — as with all the required acquisition initiatives — must be on incentives to achieve both higher quality and lower costs. Studies have shown that when the Defense Department has used continual competition in the past (for instance by splitting the percentage of the annual procurement between two producers, the larger share going to the lowest cost/highest quality producer), overall program cost savings on an average of 25 to 30 percent have been realized, along with significant performance improvements.34

Recognizing these potential benefits, on April 1, 1985, Congress passed the Competition in Contracting Act.35 This law requires not only the consideration of competition on all major weapon systems, but also that this be reported on to Congress. While the Competition in Contracting Act is clearly a move in the right direction, there is some danger that the purpose of requiring the increased competition — improved performance at lower costs — will be subverted through improper implementation. We have already begun to see this happen. What has captured the attention of both Congress and DoD are the short-term benefits of holding “auctions” for low-bidder awards; however, adequate attention has not been given to the attendant risk of receiving very inferior performance and very low reliability from the budget-priced goods. This is a particularly bad problem given the highly complex, high-technology makeup of most advanced weapon systems. It is necessary for the DoD to move to “value competition,” competition for the best goods at a reasonable price. In defense, as in the non-defense commercial world, it is often to the buyer’s advantage to spend a little more money to get a lot more quality; but “opening the envelopes” and accepting the lowest bid is administratively much easier.

Congress has made DoD’s position more difficult by wording the laws regarding competition in such a way that competition in de-

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...defense works for the benefit of the suppliers, rather than the buyer. In the commercial world, a business firm generally selects a few, previously-qualified sources as bidders, then sticks with the good ones for future business, dropping the ones not providing high-quality products. In contrast, current law requires the DoD to accept bids from all potential suppliers, regardless of demonstrated quality or prior performance. This is what Congress has called "free and open" competition, as contrasted with the more limited, but far more effective competition of the commercial markets. Congressional regulation of the form of DoD competition goes still further by adding a large number of other factors into DoD's decisions, socioeconomic variables unrelated to cost and quality of product. These include, for example, a small business preference, an unemployed area preference, a minority firm preference — and there are a total of over fifty such requirements. In this way the DoD, which should be in the position of a very strong buyer (capable of driving quality up and prices down), is hand-tied by its inability to use normal market forces in its behalf. Congress must either do something to help the DoD use its market position to save public resources, or acknowledge what it is doing and adjust DoD's budget for the cost of using defense procurement as a means of subsidizing unrelated social goals. The cost of these subsidies has been estimated at between 15 and 30 percent of DoD's spending.36

4. Increased Use of Commercial Systems, Parts and Specifications

Until recent years, defense technology was generally far ahead of its commercial counterparts, so that paying the former's acknowledged higher costs could be justified. However, in many areas (electronics, for example) this is no longer the case. Better and cheaper equipment is often available in the highly competitive and fast-growing commercial marketplace. Nonetheless, the defense establishment (in both government and industry) has clung to its traditions, insisting upon extensive use of special-purpose equipment and of parts built from special military specifications. The overall result is that the DoD pays dearly — often five to ten times as much — for the specialized nature of its parts and equipment, and yet sometimes gets inferior results. For example, in microelectronics, today's commercial equipment not only is built to withstand environments (such as being mounted on automobile engines) that are as harsh as those stipulated by DoD, but this large-volume, field-tested commercial equipment is also higher in quality, lower in cost,

and incorporates much more advanced technology than comparable military equipment. One recent study of comparable electronic systems, including computers, radios, sensors and displays, found the commercial equivalents to be between two and ten times cheaper, up to five times faster to acquire, generally more reliable, and one to three years more advanced in technology — yet capable of performing as well in the same environments.\textsuperscript{37}

It is time for Defense to shift to the selection and use of existing commercial systems, parts, and specifications as its first priority, whenever these commercial equivalents will do the military job. These parts have all met the market test for both quality and price. The DoD will, by making this shift, have all the advantages of the continuous competition of the commercial marketplace without having had to create the market itself. This approach has the added benefit of increasing the integration of the military and commercial industrial worlds, introducing not only far more cost sensitivity into military procurements but also providing the potential for a rapid surge in production. Our capabilities for emergency increases in production would be greatly enhanced if existing commercial production lines could be quickly and easily converted to defense production in periods of crisis.

5. \textit{Reward Good Performance with Future Business}

Competitive selections of suppliers for future Defense business are based almost completely on promises contained in the proposals submitted for a particular award. There is very little automatic, institutional consideration of the actual performance (in terms of quality, delivery and cost) achieved by a particular supplier on prior programs. The opposite approach is taken in the commercial world, where firms are rewarded with new business if their past performance has been good and are closed out of future business if their performance has been poor. Secretary McNamara tried to implement a performance-based source-selection system when he first came to the Defense Department, but his efforts met with considerable institutional resistance and were subsequently dropped. Nevertheless, the need to reward success has not diminished, and new efforts should be made in this direction.

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6. Profit as an Incentive

Commercial firms are motivated to increase their profit margins by cutting costs. The Defense Department, however, follows the perverse practice of negotiating a contractor's profit margin each year without regard to how the product's costs in prior years have compared to expected costs. In the largely sole-source environment of defense procurement, the contractor thus actually has a built-in long-term incentive to raise his costs. This follows from the fact that the cost basis used for profit negotiations in production programs is that of the previous year's costs. The higher the costs, the more profit dollars next year, since the percent profit margin tends to remain about the same from year to year. A far better approach would be for the government to allow a higher profit margin in subsequent years if the costs incurred in prior years fell below expectations. If costs rose in one year, the contractor would receive a smaller profit the next; but if costs actually fell in one year, the contractor could be assured that his profit margin would rise in negotiations for next year's contract. Similarly, profit margin could also be tied to a system's demonstrated reliability, in order to create an incentive in this area as well. By rewarding good performance with higher profits, the defense market would again move towards normal commercial practice.

7. Reward Lower Costs With Increased Quantities

The military services' incentives to achieve lower costs could be greatly enhanced by a policy which permitted the services to buy larger quantities, or improve the performance, of those particular systems for which unit costs fell below expectations. Part of the cost savings would in this way be returned to the services, to be used to acquire greater military capabilities. As things stand now, the relevant program office loses the savings if costs are reduced — another obviously perverse incentive. Instead, savings could be used to improve the performance of systems (for example, through increased reliability testing), to buy more of them, or to pay for needed product modifications. A version of this price elasticity incentive (based on the commercial-market characteristic of greater sales at lower costs) was used successfully by former Secretary of Defense James Schlesinger, when he offered the Air Force a choice between a larger number of fighter wings if lower-cost F-16 aircraft were purchased, or a smaller number of aircraft if it chose to buy the more expensive F-15s (for the same total dollars). The Air Force opted for the lower-performance, lower-cost, greater quantity option, so today there are F-16s in the Air Force inventory. Unfortu-
nately, the concept of increased quantity for reduced costs has never been institutionalized, so the stress on maximum possible performance from each system has continued.

In order to encourage broad quantity/quality tradeoffs, Congress should move to a “mission area” budget, rather than continuing to use today’s “line-item” budget. For example, there is currently a separate budget approved for the F-15 and the F-16; if a mission area budget were used, Congress would set the dollar level to be spent on “Tactical Aircraft” and the DoD would make the necessary quantity/quality tradeoffs. In this way, Congress would be forced to address why defense money is spent, rather than only deciding where defense money is spent. Although this would obviously result in more difficult decisions for Congress, the increased rationality of defense procurement would be highly desirable.

8. Technology Demonstrations

Faster, more efficient major weapon acquisition programs require that high-risk subsystems (such as radars, engines, and computers) that incorporate next-generation technologies should, whenever possible, be developed independently of the complete weapon system. They should then be fully tested before a commitment is made to include them in the overall weapon system. This practical demonstration of new technology prior to application in a weapon system is the proper use of the “fly-before-buy” concept. It would reduce both the cost risk of major weapon system development programs and the time necessary to complete them. When new subsystem technology has been demonstrated, it can be quickly inserted into the overall program (the common commercial practice of standardized interfaces would have to be used) and brought rapidly into the field. This “modification” approach has already proven to be an extremely efficient way of developing new weapon systems (both in the U.S. and other countries), but the current DoD acquisition and budget processes remain structured primarily around the development of complete new weapon systems.

9. Design-to-Cost

In the commercial world, advanced technology is used to simultaneously lower equipment costs and improve the performance of new systems. In the defense world, however, advanced technology is used almost exclusively to maximize performance, while costs continue to increase. A comparison of commercial electronic systems, where performance has been increasing dramatically while costs have been rapidly falling, and military electronic systems, where both
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performance and costs have been rising proportionately, points this difference out very clearly. Additionally, it has been estimated that developing the capacity to get the last few degrees of performance out of a weapon system tends to raise defense system costs by 30 to 50 percent, correspondingly reducing the number of weapons which can be acquired. If unit cost were made an important engineering design criterion, along with performance, the DoD could then take advantage of new technologies both to improve the quality of its equipment and to increase the quantities it is able to purchase. Essentially, the DoD would be trading a very small reduction in an individual system's performance for a large increase in the number of systems acquired.

In the same way, an important, early commercial design consideration is the development of innovative techniques to reduce subsequent logistics costs. Today, DoD support costs are prohibitive. Their reduction must be recognized as an early engineering design task, not something to be fixed later. If this change is not made, the DoD simply will not have enough money to operate and maintain its advanced equipment in the coming decades. The 600-ship Navy will be tied up in port and our bombers kept in their hangars because it will be too expensive to use them, short of an all-out war.

10. Fund Non-Traditional Concepts

In order to encourage the development of new technology that can be used to improve overall military effectiveness in non-traditional ways, it is necessary for the services and the independent Defense Advanced Research Projects Agency (DARPA) to set aside funds for non-traditional systems and technology. Non-traditional technologies will otherwise remain underfunded, as the institutions that control the research process consider them, for cultural reasons, to be a low priority. (The cultural reasons are, again, that these new technologies would cut across and into historical service roles and missions.) For example, both the Army and Air Force have had trouble funding and utilizing remotely-piloted-vehicles, even though the Israeli armed forces have clearly shown the military value of such unmanned vehicles in combat. If a special allowance

38. For a discussion of the cost trends (vs. performance and time) of military electronics systems, see J.S. GANSLER, supra note 12, at 100, fig. 4.1.
39. For a discussion of the use of technology to reduce costs, see PACKARD INTERIM REPORT, supra note 6, at 18-20; see also J.S. GANSLER, supra note 12, at 279.
40. The Air Force is adopting this technique to achieve lower production costs on its next-generation fighter program (called the Advanced Tactical Fighter). It is to be hoped that this will allow for future purchases of the needed quantities of this aircraft, and will reverse the above-noted trend of shrinking annual purchases.
(not charged against the services' budget) were made available for the development and demonstration of prototypes of non-traditional systems, a form of internal competition could be set up between improvements in traditional systems and innovative new ways of accomplishing the same task. The innovative alternatives could then be tested against the traditional approaches. To create the proper incentives, it would be best if these non-traditional approaches were pursued by separate organizations within each service, and/or if increased funding were given to DARPA.

In each of the above ten areas, the attempt is to substitute natural incentives for regulation; it is important to emphasize that these changes will be strongly resisted by the existing system and will not be easy to implement. Yet, the government has already initiated efforts at implementing some of the ten, and many of the others are very similar to practices that are widely utilized in the commercial marketplace. There is thus a large body of "lessons learned" that could be applied to defense procurement. The combination of these changes clearly would result in a very significant cultural change within the Department of Defense, a shift from heavy dependence on regulation for improved performance and lower cost to the use of natural incentives to meet these same objectives. It is very likely that the use of such incentives will in fact prove far more effective than the historic regulatory approach.

The three broad recommendations for change previously described have in common a focus on the buyer, or on the "demand side" — from changes in the requirements and planning process, through revisions in the budgeting and program management process, to incentives to create higher performance and lower cost in the execution of weapon system procurements. Stopping after only these changes were made, however, would leave out a major area where effectiveness and efficiency could potentially be much improved, namely the "supply side," or the defense industrial base. This brings us to the fourth and last of the broad reforms required.

D. Visibility into Industrial Base Problems

Historically, the assumption has been that there is a free market operating in the defense arena, one which adjusts to changing conditions, achieves economic efficiency, and supplies strategic responsiveness to the nation's security needs. Unfortunately, this has not been the case. The principal reason is that the overall defense market consists of one buyer and, in many instances, only one supplier. Under these unique conditions, the Defense Department, as the
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only buyer, has an obligation to concern itself with the health and responsiveness of the defense industry. In order to do this, DoD needs to have some organization responsible for the industry’s health and in a position to take action to ensure it. At times, such an office might encourage the establishment of a second or even a third producer to create competition. At other times, it might encourage the awarding of a contract so as to create greater labor stability for increased efficiency. At still other times, it might investigate the critical lower tiers of the defense industry to ensure that efficiency and responsiveness are attained in the supplying of critical parts. The U.S. is the only nation in the world that does not treat its defense industry as a vital national resource. Today, the Defense Department does not have the organizational structure to perform the functions necessary to maintain the health of the defense industry, at either the prime contractor level or the critical lower-tier levels. Specifically, what is missing is government visibility into the conditions of efficiency and effectiveness in the sectors of the industrial base which are critical to national security. This visibility can be provided by gathering data in such areas as the following: the amount of competition in given sectors; labor force stability; bottlenecks; capital investments; foreign dependency; long-term research and development; capacity utilization; surge capability; and integration of civil and military production. When provided with visibility into the health and responsiveness of the industrial base, the DoD can then include such considerations in its major acquisition and budget decisions. For example, DoD could make informed decisions, not possible now, on the best time and location to start up a new production line, or on whether to obtain a second supplier to do research in a critical component area, or on where to target investments so as to make possible the rapid surge of a production line in the event of a crisis. These supply-oriented decisions are not now a part of the DoD’s acquisition process, nor is the data base necessary to provide the needed visibility and oversight available. With the addition of such considerations into procurement decision-making, however, far greater efficiency and effectiveness could be achieved in this unique marketplace. Additionally, industrial responsiveness could be made a more significant part of the overall U.S. national security posture.41

41. A more detailed discussion of the needed industrial-base actions may be found in Gansler, Can the Defense Industry Respond to the Reagan Initiatives, INT’L SECURITY, Spring 1982, at 102.
As part of the recommendations of the Packard Commission and as implemented by the Defense Reorganization Act (the Goldwater-Nichols Act), a new position of Defense Undersecretary for Acquisition has recently been created. This individual will have overall responsibility for the approximately $150 billion of annual defense procurements. This is the position in which both the demand-side and supply-side recommendations described above can find a champion. Let's hope the new Undersecretary chooses to lead this attack.

Conclusion

The last few years have been dramatic ones for "defense reform." Much new legislation was implemented, with a clear and unfortunate trend towards increased and more detailed regulation of all aspects of the defense industry. Additionally, the number of actions taken by the Justice Department on suspensions and debarments of defense contractors went up by a factor of four. The shift towards increased regulation and criminalization has been further heightened by actions within the Department of Defense itself, which moved in the direction of turning over greater acquisition management responsibility and authority to lawyers and auditors, as a short-term solution to perceived increases in "waste, fraud and abuse." At the same time that these negative trends have been developing, however, both the executive and legislative branches have initiated far broader and more long-range efforts at the needed basic structural reforms. Activities are under way which promise greater results in these more significant directions.

Which of these conflicting trends — increased regulation or structural reform — will prevail is not yet clear. It is clear, however, that they can't exist together; for example, increased regulation and increased competition are just not compatible. Additionally, how the changes are implemented can be just as important as which ones are selected. Many good laws have been killed by poor implementation. Finally, both of these approaches argue for significant change, but change within the current overall institutional pattern. There are, of course, two other options. Minor adjustments to the current system could be made (if you believe it's working well, why fix it; just correct the abuses); or, at the other extreme, there could be radical change in service roles and missions, in addition to the formation of a single, civilian buying agency (the current system will never work, so let's scrap it and start over). This article argues for a middle-of-the-road approach. Even the set of recommendations contained
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herein, however, will still result in rather dramatic changes in organizations and procedures and, ultimately, in a significant "cultural change" in the way the DoD does business.

The implementation of these four changes — improved methods of allocating defense resources and establishing weapon system requirements ("JCS reform"), greater program and budget stability ("budget reform"), shifting from regulations to incentives for higher quality and lower-cost equipment ("procurement reform"), and visibility into the industrial base ("defense industry revitalization") — will be difficult and will take significant time, especially given that it takes many years to develop and produce a new weapon system. So that the changes are not totally disruptive, then, they must be implemented on a relatively gradual basis. Mostly, what will be required is a desire for broad, positive change on the part of both the legislative and the executive branches.

Today, many on Capitol Hill and in the Pentagon are attempting to achieve procurement reform in piecemeal fashion, from the creation in the Office of the Secretary of Defense of a new Deputy Assistant Secretary for Spare Parts (a "spare parts czar") to the addition of thousands of new auditors, and from hundreds of pieces of detailed procurement-reform regulations and legislation to even greater congressional micro-management of every defense budget line item. Such a chaotic climate makes it difficult for those in Congress and in the executive branch who are trying to make the needed, broader changes take hold. However, the coming years will represent an even more significant challenge for those in charge of defense procurement. No longer can one expect that large increases in defense budgets are likely to continue. In the presence of significant budget constraints, there will be even fiercer political infighting (again, both on Capitol Hill and within the services). In this environment, there are likely to be increasing cries for "immediate reform," with its associated flood of new legislation and newspaper headlines. The challenge will be to effect the required broad changes in the presence of this overall environment, without damaging what is worth saving in the existing system. It is clearly a difficult challenge to meet. If the necessary changes can be made, however, the public's confidence in DoD management can be restored, the taxpayers can get their money's worth, and our national security can be strengthened. These results are worth the extra effort.