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***ACQUISITION REFORM REGIMES ON THEIR
OWN TERMS: CONTEXT, MECHANISMS,
EFFECTS, AND SPACE PROGRAM IMPACT***

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Summary

We have entered a new regime in how the Defense Department acquires programs, especially those for space. Though we will not fully understand what this new regime consists of for many years, the changes creating it are responding to past efforts to reform defense acquisition. We can better understand what previous acquisition reforms have achieved, or failed to achieve, if we evaluate them on their own terms. Since the creation of the modern defense acquisition system in 1970, there have been six distinct acquisition regimes. While each regime has sought to implement what are widely considered best practices for acquisition, the regimes differ most in how they seek to adjust the changes of the past regimes, how they find a sweet spot that allows for decentralized execution but centralized oversight, and whether they treat space systems uniquely or like other defense programs.

Introduction

In the FY2019 National Defense Authorization Act, Congress tasked the Department of Defense (DOD) over the next year to develop a plan for how to acquire space systems. That work will take place even while Congress and the Department debate how to organize for space, and the Department seeks to implement new authorities Congress has already provided to acquire programs differently. At the start of this new era in how to acquire programs, we can draw lessons by looking back at past efforts to change the defense acquisition system.

Acquisition reforms are frequently distinguished into distinct eras, each reflecting different goals, events, and even personalities. But even this division overstates how cohesive each era is.

- ◆ Each era is composed of multiple initiatives, most interrelated yet still separate from one another.
- ◆ Moreover, in practice, the eras overlap. Even as one era's initiatives are being implemented, the ideas and initiatives that will underpin the following regime are being discussed, developed, and sometimes implemented.
- ◆ Most importantly, the meaningful outcomes of each era are the specific programs initiated, developed, and fielded during that regime. That must be the final measure: did the process field innovative technology in an efficient way. Yet almost no program is initiated, developed, and fielded in one, single acquisition regime, complicating how reform is evaluated.

This paper considers acquisition eras on their own terms. It examines how acquisition reform initiatives in recent decades were implemented during six acquisition regimes, each capturing various legislative and regulatory changes, structure changes, and initiatives attempted in their time. The appendices list the policies and practices each regime tried to favor. While a specific mix of initiatives was pursued in each era, a key difference is how initiatives were implemented and how they built on what came before.

Five of the regimes are identified by an Institute for Defense Analyses (IDA) study:

- ◆ Defense Systems Acquisition Review Council (DSARC), 1970–1982

- ◆ Post-Carlucchi Initiatives DSARC, 1983–1989
- ◆ Defense Acquisition Board (DAB), 1990–1993
- ◆ Acquisition Reform, 1994–2000
- ◆ Post-Acquisition Reform DAB, 2001–2009

We identify a sixth regime, beginning with the passage of the Weapons System Acquisition Reform Act of 2009 and continuing through implementation of the FY2017 National Defense Authorization Act’s reorganization of the Office of the Secretary of Defense’s (OSD) acquisition functions. Figure 1 shows key events that created each regime.

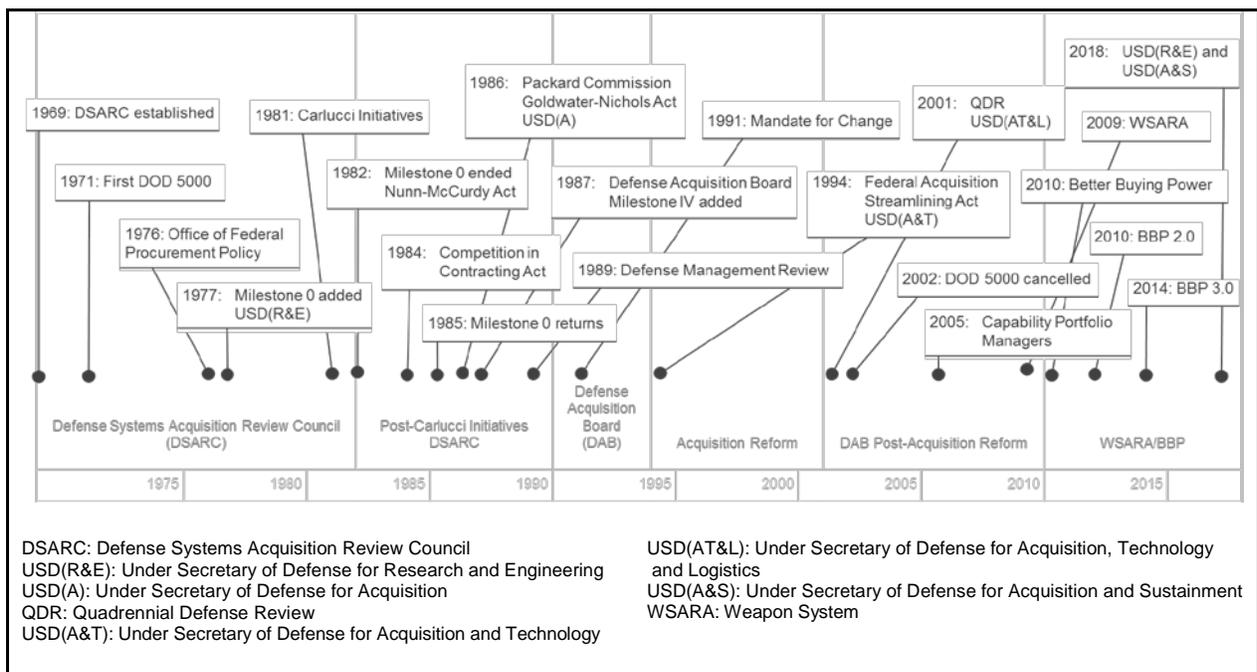


Figure 1. Acquisition regimes capture multiple events.

We set out a context for each regime, describing which reforms were undertaken, the mechanisms through which the reforms were implemented, the effect of the reforms, and how the regime affected space programs. Every regime produced new weapons, though every regime also saw continued cost growth, according to the IDA study.

When examined this way, each acquisition regime can be considered on its own terms even though the eras comprise multiple issues, blur together in time, and produce few programs solely within their regime. Figure 2 displays the regimes' select space programs overlap.

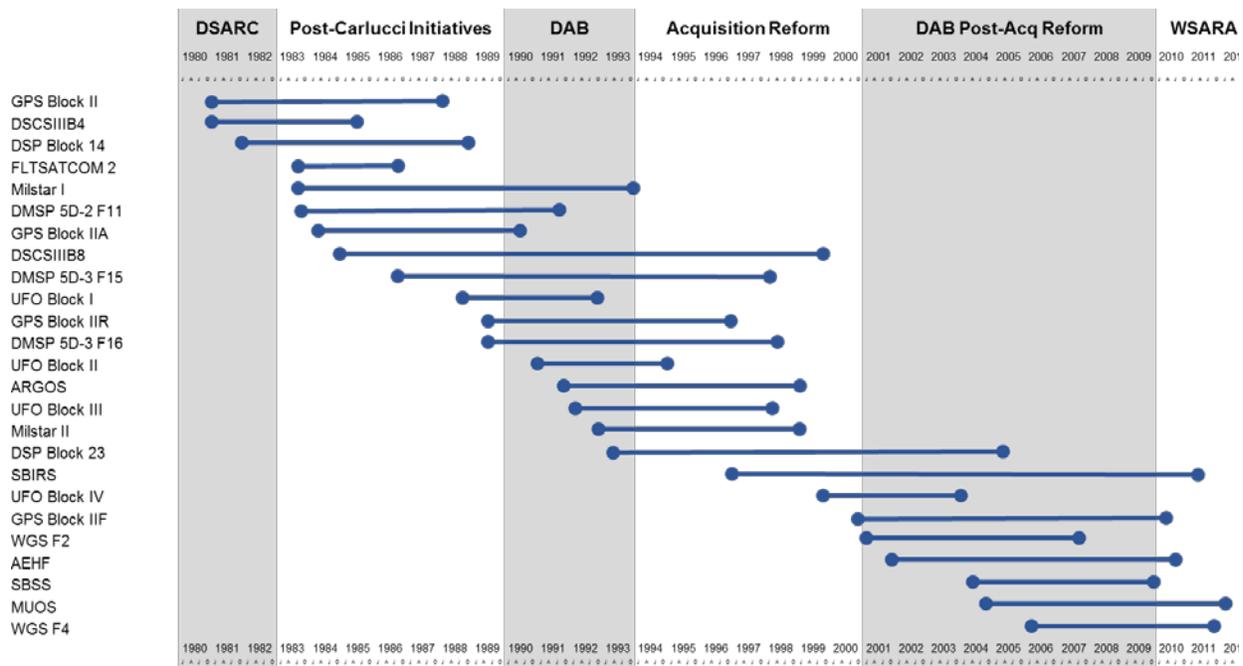


Figure 2. Satellite development stretches across multiple acquisition regimes. Time from ATP to launch for the first space vehicle launched from each block.¹

Despite these complications, each regime implemented different mechanisms to encourage best practices in the acquisition process. Often these mechanisms were attempts to find a sweet spot that allowed for centralized direction but decentralized execution. Each regime sought to provide clear guidance and then empower individuals within that guidance. Not only is such a sweet spot hard to find, but other goals—such as incorporating military judgment on requirements, responding to Congressional demands, and freeing all parties from

regulatory burdens—tugged each regime's efforts in unexpected directions.

All space programs have suffered turbulence as they have become less unique compared to other military systems in their reliance on cutting-edge science and technology. Yet space programs have become ever-more fundamental to how the military operates. Concurrent with the broad swings of acquisition initiatives described herein, there is a debate over whether to manage space programs inside or outside the standard acquisition process.

Understanding how acquisition regimes were implemented is particularly important at the outset of a new era that is prioritizing speed in fielding capability, achieved in part through greater delegation, a greater use of flexible acquisition authorities, and a greater willingness to accept risk.

Each of the previous regimes has left an imprint on how the DOD conducts acquisition today. Despite many blue-ribbon studies to date, no reform has proven to be the silver bullet to solve all engineering and financial troubles. Individual programs have often suffered perturbations because they have been caught in multiple regimes. Yet each regime has built on and adjusted to the previous ones.

The Defense Systems Acquisition Review Council (DSARC): 1970–1982

Context

In the 1960s, Secretary of Defense Robert S. McNamara had antagonized military service leadership and members of Congress by asserting greater centralized control of the Department of Defense.² Yet stories of poor acquisition oversight and cost growth continued, highlighted by congressional hearings on the troubled C-5 cargo aircraft program.³

In the next administration, Secretary of Defense Melvin R. Laird sought to decentralize the acquisition process while still demonstrating effective oversight.⁴ To do this, he recruited David Packard, co-founder of Hewlett-Packard, to serve as Deputy Secretary and establish a new acquisition regime.⁵

Mechanisms

Packard pursued these twin goals by creating overarching acquisition policy, an oversight mechanism, and supporting tools, but sought to leave the day-to-day management of acquisition programs to the military services. Appendix A lists the principles he sought to imbue in the acquisition process.

- ◆ *DSARC*. Packard created the Defense Systems Acquisition Review Council (DSARC) in 1969.⁶ Though originally an ad hoc advisory panel, the DSARC quickly became the formal body by which OSD would oversee service acquisition efforts.⁷ It would review service acquisitions at three formal points in a program's life, called milestones; these are points when the services must positively gain OSD approval.⁸
- ◆ *Initial Directive 5000*. Packard also laid out overarching acquisition policies the services were to follow to gain OSD approval at the

milestones. First articulated in a memorandum from Packard in 1970, these policies were then codified in a July 1971 DOD directive 5000.01, which also formalized the DSARC and milestone approvals.⁹

- ◆ *Supporting Tools*. Packard also created supporting tools to support the DSARC's review. Three key ones were:
 - *Cost, Schedule, and Performance Thresholds*. Acquisition programs were to be reviewed by the DSARC against thresholds formally set out by the owning military service.¹⁰ These thresholds became the principal tool OSD used to oversee—and manage—acquisition programs.¹¹
 - *Independent Cost Estimating*.¹² Packard also chartered the Cost Analysis Improvement Group to conduct independent—but not directive—cost estimates.
 - *Defense System Management School*. To imbue acquisition programs with his objectives and standardize practices, Packard moved the existing joint school for acquisition to Washington, DC, with a later directive calling on the services to send their program managers through this centralized curriculum.^{13,14}

These mechanisms underpinned how the acquisition system was structured throughout the 1970s. Additional centralized control was layered in later by Congress creating the Office of Federal Procurement Policy in 1976 and the Carter administration seeking to implement Zero-Based Budgeting, which required all programs to be justified anew each year.^{15, 16} Secretary of Defense Harold Brown used these government-wide initiatives to assert greater centralized intervention

into service acquisition programs. Most notably, he established a Milestone 0 which decided whether a need for a program even existed and, with congressional support, promoted the senior acquisition-focused person in OSD to an Under Secretary, asserting greater day-to-day oversight of select acquisition programs.

Effect of Reforms

The DSARC era's greatest impact was in creating the "systematic OSD oversight" of acquisition still in place today. This established decentralized execution by military service and components overseen by a centralized milestone approval body, overarching policy directives, and supporting—but not directive—tools OSD used to evaluate service proposals and progress.¹⁷ While many of the names were changed in later regimes, at least prior to the upcoming 2018 acquisition reorganization, this approach remains fundamental to how defense acquisition is conducted.

But despite this enduring impact, the DSARC acquisition regime did not produce sufficient improvement in cost outcomes for the acquisition of weapons systems. An IDA study found that program acquisition unit cost growth in the DSARC era averaged 32% across examined programs.¹⁸ While having less than half the cost growth of the 1960s, such increases in unplanned costs failed to satisfy policymakers, including Congress, that the DOD had a handle on acquisitions.^{19,20} It is possible the more systematic tracking of costs brought greater attention to the overruns, even if they were smaller in magnitude.

This era did, however, introduce much of the guided missile technology underpinning today's force including Sidewinders, Sparrows, Mavericks, Patriot, Hellfire, and the command systems that tie the force together like Airborne Warning and Control System (AWACS), E-4 Airborne Command Post, and E-2 Hawkeye.²¹

Moreover, despite the more formal process, the military services never fully implemented all of Packard and his successors' policy guidance, but still had programs successfully approved at each milestone.²² With this continued blurring of roles and responsibilities, observers differed on what was causing sub-optimal acquisition cost outcomes.

Impact on Space Programs

The most notable example of the DSARC era's impact on space programs is the formal initiation of the Global Positioning System (GPS) as a program. Prompted by Department of Defense, Research and Engineering (DDR&E) interest in satellite-based navigation, Deputy Secretary William Clements in April 1973 chartered a joint program office "to consolidate the various proposed positioning/navigation concepts into a single comprehensive DOD system known as the Defense Navigation Satellite System."^{8, 23, 24} In line with the relatively new DSARC regime, the Deputy Secretary delegated management of the program to a military service, selecting the Air Force to run the joint program office and requested a plan, including cost and operational thresholds, be presented to the DSARC by August of 1973.²⁵ The Air Force officer running the program out of the Space and Missile Systems organization then presented essentially the Air Force's preexisting system, known as Project 621B, to the DSARC, which rejected the proposal.²⁶ In response, the officer drew up a plan that incorporated the concepts underway with the other services.²⁷ The DSARC then approved this program in December for milestone 1 as the Navstar GPS program.²⁸

Early GPS efforts had struggled to gain support from the military services.²⁹ The centralized DSARC process provided top-level support for the program, forced the services to commit to a single program combining all their efforts, and yet left program management to a single service, the U.S. Air Force.

Post-Carlucci Initiatives DSARC or “Acquisition Improvement Program”: 1983–1989

Context

Though the DSARC process was created to ensure decentralized execution of acquisition programs, OSD officials used the milestone approvals to insert themselves into the services’ processes, such as by adding a milestone 0. Yet cost growth and poorly performing programs continued.³⁰

In 1981, Deputy Secretary of Defense Frank Carlucci again sought to push responsibility for acquisition programs down to the military services and components. He launched his Acquisition Improvement Program (AIP), consisting of 32 initiatives, to implement what Secretary Caspar Weinberger called “controlled decentralization.”³¹ These initiatives are listed in Appendix B.

Mechanisms

To implement his initiatives, Carlucci relied on the existing DSARC system updating DOD Instruction 5000.01 in his first year.³² The new directive sought to modify the DSARC in three specific ways:

- ♦ Reduce the number of milestones requiring DSARC approval from four to two,
- ♦ Delegate more programs to the military services for milestone approval, and
- ♦ Reduce the paperwork supporting each milestone.³³

Carlucci expected to achieve better outcomes despite the reduced oversight mechanisms by making tough decisions at the remaining milestones: “[W]e are not going to allow [weapons] systems to pass DSARC . . . if the money in the budget is not sufficient to support the DSARC decision,” Under Secretary of Defense for Research and Engineering Richard D. DeLauer insisted late in 1981. “For years,” DeLauer continued, “DSARC has approved

systems that were underfunded and budgets have included systems with no [mission requirements]. We’ve just stopped that.”³⁴

Externally, Carlucci sought to stabilize program funding by relying on multiyear procurement.³⁵ Additionally, the Reagan administration also sought to streamline acquisition regulations by bringing DOD, the National Aeronautics and Space Administration (NASA), and the General Services Administration under a single system, the Federal Acquisition Regulation (FAR).³⁶

Effect of Reforms

Despite his intent to empower the military services, Carlucci’s initiatives floundered on the military services’ reluctance to accept the full ramifications of the initiatives. Most notably, the services resisted killing programs outright when they had not met their goals at DSARC milestones.³⁷ Instead, the services preferred to delay decisions by stretching out the programs’ timelines and thus keep programs alive even if their schedule slipped or the total number of systems purchased declined.³⁸ The services also resisted multiyear procurements to preserve as many options as possible in each year’s budget. Counterintuitively, the services—particularly the Navy—even resisted reducing the number of milestones and supporting paperwork because their own leadership had come to rely on the process for its own internal decision-making.³⁹ Neither did the government-wide streamlining of acquisition regulation make a clear reduction, leaving enough rules to fill four three-inch binders plus an additional defense-unique supplement.⁴⁰ In 1986, the Government Accounting Office (GAO) found that only 10 of the 33 initiatives had been implemented.⁴¹

The initiatives did not improve acquisition outcomes. As in the DSARC era, the 2015 IDA study found that average program acquisition unit costs growth increased by 19% in the Post-Carlucci initiatives period.⁴² However, this regime produced

many of the platforms today's force still relies on, including the DDG-51 destroyer, modern M1A2 tank, V-22 Osprey, and KC-10 air refueling tanker.

In the end, the Carlucci initiatives were largely overtaken by congressionally driven changes throughout the 1980s that culminated in a new acquisition regime, the DAB era.

Impact on Space Programs

Only one satellite program, Milstar, was initiated in the height of the Carlucci reform regime; the UHF Follow-On was formally initiated in 1988 even as the antecedents of the next regime were falling into place.⁴³ Moreover, Milstar's oversight captures the limited implementation of the Carlucci initiatives. Milstar was overseen not by the DSARC, but an ad-hoc executive committee created to periodically review the program.⁴⁴ Yet neither was Milstar delegated to a single service as part of Carlucci's decentralization. Instead, the executive committee was chaired by the Deputy Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) to oversee the Air Force-run program office. Part of the reason for this unique arrangement were security concerns, as Milstar was designated a special access program.

Despite not falling under the acquisition regime during which it was developed, Milstar still suffered in outcomes, enduring a congressionally-mandated restructuring in 1991 to 1992, in order to "(1) substantially reduce program costs, (2) increase system utility for tactical forces, and (3) eliminate unnecessary capabilities for protracted nuclear warfighting missions and operations."⁴⁵

Defense Acquisition Board: 1990–1993

Context

Even while Deputy Secretary Carlucci sought to decentralize acquisition in the early 1980s, spare parts scandals galvanized Congress to intervene directly on acquisition policy.⁴⁶ Congress was already working to strengthen centralized Secretary of Defense authority in directing military operations when President Reagan chartered David Packard to lead a blue-ribbon commission for recommendations to Congress. The Packard Commission accepted strengthening centralized operational control and extended it to acquisition.⁴⁷ While the Commission's report spoke of the importance of decentralized execution to harness people's entrepreneurial spirit, it emphasized "strong centralized policies" and a "single senior official...to provide overall supervision of the acquisition system."⁴⁸ Appendix C lists the commission's acquisition recommendations.

By 1990, Congress had passed several waves of legislation and the Defense Department was implementing the new, more centralized acquisition regime.⁴⁹

Mechanisms

Four key mechanisms implemented the wave of acquisition legislation:

- ◆ *DAB Created.* The old DSARC was overhauled into the DAB, now chaired by the newly-created civilian acquisition czar, the Under Secretary for Acquisition, and the Vice Chairman of the Joint Chiefs of Staff and made up of the new Service Acquisition Executives (SAEs).
- ◆ *New Structure.* The military departments broadened the role of their assistant secretaries for research and engineering, folding in the people and responsibilities that had been part of the uniformed Deputy Chief of Staff offices.⁵⁰ The new offices—each led by a civilian

assistant secretary—were designated as the SAEs. Program executive officers (PEOs) overseeing a portfolio of similar programs reported directly to the SAEs, with program managers reporting directly to PEOs.⁵¹ Modeled after the Packard Commission's recommendation, and reflecting Congress's effort to clarify the roles of service secretaries and chiefs, this reform was intended to unify and shorten the acquisition chain of command, introducing more accountability.

- ◆ *Regulations Were Streamlined.* A new 5000 series of documents replaced 65 acquisition-related publications and created four acquisition categories that brought all acquisition programs under the central system while assigning responsibility for program oversight to either the Defense Acquisition Executive (DAE) or SAE based primarily on cost.⁵²
- ◆ *Program Milestones Expanded to Five:* Studying concept, demonstrating concept, development, production, and major modification. Approval for studying concepts remained optional and other milestones were approved according to what acquisition category the program fell into.⁵³

Effects of Reform

Despite the congressional and DOD focus on centralization, the mechanisms only partially solidified central authority. Most notably, the first Under Secretary of Defense for Acquisition appealed to have the new SAEs report directly to him. The Deputy Secretary at the time was unwilling to overturn the separate organization of the military departments and left the SAEs reporting to their respective service secretary.⁵⁴ Similarly, though the new regime extended centralized policy over all acquisition programs, the bulk of programs were still executed and overseen by the services.

Although the uniformed systems and materiel commands lost direct control of program offices, internal service processes remained dominant for most programs as the usually two-star flag officer PEOs acknowledged the positions of the 4- and 3-star leaders in the systems and materiel commands.^{28, 55, 56} The streamlined regulations did not prove to be as dramatic a change. “The three new 5000 series documents totaled 900 pages long—no previous versions had ever exceeded sixty pages.”⁵⁷

As with the other eras, the new regime did not lead to better cost outcomes. IDA found 36% average program acquisition unit cost growth under this regime.⁵⁸ Yet, again, the regime still started multiple programs critical to today’s force, including F-22, F/A-18 Super Hornets, and the modernized Patriot PAC-3 missile system.

Though acquisition authority was not as fully centralized as advertised, by aggressively implementing many of the legislative reforms, the DOD headed off yet more direction from Congress.⁵⁹

Impact on Space Programs

Both executive and legislative senior leaders implemented this regime to centralize policy and strengthen central oversight. At the close of the Cold War, these efforts began to extend to space programs, which had often been conducted as unique science and technology projects of particularly high importance.⁶⁰ With budgets capped by legislation, however, proponents across multiple warfighting domains saw their programs as pushing the state-of-the-art and having particularly high importance, undermining space programs’ claims on resources and exemption from standardizing oversight.⁶¹ It was in this period that the Air Force organizationally reunified ballistic missile programs with space programs to create the USAF Space and Missile Systems Center.⁶²

A Missile Defense Agency historian lamented that the space-based missile defense program, Brilliant Pebbles, failed because the agency director was unable to secure a DAB meeting, let alone approval, and thus the program was unable to advance in development.⁶³ The same author separately characterized Brilliant Pebbles as a victim of the tension between the competing acquisition reform goals of empowering subordinates and centralizing policy and oversight.⁶⁴ Brilliant Pebbles is not a clear cut case for acquisition reform because it invoked so many other issues. The Missile Defense Agency historian acknowledged several of these: failed tests and questions about technological feasibility, disagreement about whether the missile defense agency or the Air Force should manage the program, and concerns about whether the program would violate the Anti-Ballistic Missile (ABM) Treaty.⁶⁵ Characterizing these disputes as an inability to secure a meeting likely confuses causality.

As the acquisition regime swung to more centralized control, Brilliant Pebbles was an example of how space-based systems were no longer automatically conceived as science and technology programs to be run and overseen outside of the standard acquisition process.

Acquisition Reform: 1994–2000

Context

Deputy Secretary of Defense William J. Perry was promoted to Secretary at the start of 1994, having long been dedicated to acquisition reform.⁶⁶ He capitalized on a mood for “reinventing government,” expressed in the Clinton administration’s desire to recast Democrats’ relationship to government and highlighted by Congress’ passing of the Federal Acquisition Streamlining Act of 1994.^{67, 68}

Perry focused on cutting through existing oversight mechanisms: “The problem is that DOD’s acquisition system is a complex web of laws, regulations, and policies, adopted for laudable reasons over many years.”⁶⁹ While thinning the regulatory burden, Perry also adapted mechanisms to achieve the centralized oversight the DAB-era reforms attempted.

Mechanisms

Perry used three principal mechanisms to cut down “red tape” while strengthening central oversight. Appendix D lists specific initiatives of the era.

- ◆ *Integrated Product Teams.* The new regime cut the number of milestones to four and streamlined the 5000 series of regulation to only 140 pages.⁷⁰ Along with these reductions, however, was a shift in how OSD would conduct oversight. Instead of the periodic senior level reviews of previous DABs, OSD oversight would come through integrated product teams (IPTs), by which “the OSD and Component staffs shall participate early and on an on-going basis with the program office teams.”⁷¹ The new approach sought to emulate industry’s success in regularly bringing together members responsible for different stages of a program’s life.^{72,73} Because the IPTs were so intimately involved in the program, formal DAB milestone reviews would often not be necessary.⁷⁴

- ◆ *Prohibiting Military Specifications and Standards.* The new regime ended the blanket use of lengthy specifications and standards to ensure a product would meet the standards of military use, which had garnered negative attention.⁷⁵ By ending military-specific specifications and standards in favor of common commercial standards, OSD also removed a means by which the military services asserted their judgment over their overseers.⁷⁶
- ◆ *Acquisition Reform Office.* Perry also established a Deputy Under Secretary of Defense for Acquisition Reform to oversee metrics and education as well as convey DOD preferences to the Office of Management and Budget and Congress.⁷⁷

Beyond Perry’s initiatives, Admiral Bill Owens sought to reform the Joint Staff’s requirements system, which set the performance goals programs must meet.⁷⁸

Effect of Reforms

As with past regimes, implementation of the initiatives remained mixed. A RAND study found that fewer than 50% of the initiatives they identified were incorporated into the 5000 series documentation.⁷⁹ The acquisition reform office never successfully established metrics by which to chart progress.⁸¹ Admiral Owens’ reforms did not overcome the Joint Staff’s requirements system’s preference for consensus.^{46, 82}

Moreover, the IDA study found the Acquisition Reform regime to have the worst outcomes of the regimes it examined with 66% average program acquisition unit cost growth.⁸³

Some of the worst excesses stemmed not from the original mechanisms, but from efforts justified by the intent to cut red tape. For instance, a House report justified directing a 25% cut to the acquisition workforce to reduce duplication, management

overhead, and take “full advantage of simplified procedures and other procedural changes established by the Federal Acquisition Streamlining Act of 1994 and other internal DOD initiatives.”⁸³ The final bill reduced the cut to 15%, but such cuts still justified an independent Air Force initiative to rely on Total System Performance Responsibility (TSPR).^{84,85} TSPR evolved from a contract condition holding the contractor responsible for ensuring a program worked, to an approach that gave the contractor control of the program so long as it met high-level performance requirements in what was described as “insight, not oversight.”^{86, 87}

There were some successful cases. For example, the Joint Directed Attack Munition (JDAM) is often touted as a product of the acquisition reform era approaches.⁸⁸ Moreover, IPTs—one of the central mechanisms introduced—remain part of the acquisition process.⁸⁹

But in all, the acquisition reform regime did not add the hoped-for discipline to acquisition, particularly in light of declining defense budgets: “In lieu of canceling major programs, DoD sought to squeeze yet more efficiencies out of them.”⁹⁰

Impact on Space Programs

Space-Based InfraRed Systems (SBIRS)-High suffered as much as any program from the practices of the acquisition reform era, most notably the TSPR interpretation of streamlining performance specifications. The Young Panel on space acquisition condemned how SBIRS-High was managed and TSPR specifically.⁹¹ One former DOD official wrote of a DAB meeting in 2002, at which the SBIRS-High program manager “revealed that he had no warning or insight into the contractor’s growing technical and cost problems because of the total system performance responsibility nature of the government’s arrangement with the prime contractor, Lockheed-Martin.”⁹² In 2003, the USAF Space and Missile Systems Commander issued a memorandum directing the greater use of

specifications and standards in request for proposals to counter the trend created by TSPR.⁹³

As part of the acquisition reform regime, in 1994, DOD established the Deputy Under Secretary of Defense for Space, who served as a high-level IPT chair for all large-dollar space programs.⁹⁴

With space systems falling under more regular acquisition processes, they also became premiere examples of the hopes and failings of acquisition reform efforts.

DAB Post-Acquisition Reform: 2001–2009

Context

Secretary of Defense Donald Rumsfeld took office promising to “transform” the U.S. military, capitalizing on an appetite for change born of frustration with the military’s use in nation-building and the effects of decreased defense spending.⁹⁵ Rumsfeld quickly made clear, however, that he did not feel the leaders of the military services understood what the military needed to become, preferring centralized direction and even execution.⁹⁶

Mechanisms

Rumsfeld and his team avoided explicitly pursuing acquisition reform, instead relying on three major mechanisms to execute a more centralized vision of transformation:^{97,98}

- ◆ *Capabilities-based Approach.* Eschewing traditional criteria for what defense programs were needed, Rumsfeld overhauled two high-level defense processes related to acquisition: the requirements and budgeting process, changing them to better reflect centralized direction on which programs to pursue and prioritize.^{99,100} A later effort set out to integrate these two processes with the acquisition process.^{101, 102} At its peak, this approach sought to make “capability portfolio managers” initiators and owners of acquisition programs.¹⁰³
- ◆ *Spiral Development.* Within the acquisition process, the regime preferred evolutionary acquisition and spiral development, which sought to buy programs in manageable pieces by inserting new technologies as the program developed—and creating opportunities for the capabilities-based approach to inject priorities.¹⁰⁴ This approach was supported by commercial best practices and congressional direction.^{105,106} In practice, though, it also

increased the number of milestones needing DAB approval to six.¹⁰⁷

- ◆ *Streamlining Overhead.* Rumsfeld also emphasized applying the IT revolution to DOD business processes, regularly arguing outmoded systems could be overhauled to free resources.¹⁰⁸ The revised—and shortened—5000 series implementing the capabilities-based approach was cited as an example of this streamlining.^{109, 110} Rumsfeld emphasized the 1990s privatization efforts seeking to devote all DOD personnel solely to “warfighting” tasks.¹¹¹

Appendix E lists transformation initiatives of the era.

Effect of Reforms

Although Rumsfeld oversaw several high-profile cancellations, including the U.S. Army’s Crusader artillery piece and Comanche helicopter, and the concept of transformation enjoyed wide recognition, his process reforms never truly altered how the acquisition process functioned.¹¹²

In contrast, the effort to streamline overhead had dramatic effects. The TSPR approach to acquisition programs born in the previous regime solidified into relying almost completely on the contractors under Lead Systems Integrators.¹¹³ And the aspirations for transformation encouraged programs to pursue ambitious technological and performance goals.¹¹⁴ Nor did spiral development limit this appetite, instead encouraging expanding requirements.¹¹⁵ Together these led to “exquisite” programs with schedule slips and cost growth, highlighted by programs like the Army’s Future Combat Systems. In all, the IDA study found average program acquisition unit cost growth of this era to be 19%.¹¹⁶

The era’s most notable accomplishment was rapidly fielding mine-resistant, ambush-protected vehicles (MRAPs) for use in Iraq and Afghanistan. Yet this

rapid fielding was done outside the standard acquisition process.

Impact on Space Programs

Secretary Rumsfeld came to office after chairing the Space Commission and initiated changes within space acquisition.¹¹⁷ “As a result of the desire to foster better integration between the developers and operators of space systems, in 2001 SMC was transferred from Air Force Materiel Command to become the acquisition arm of Air Force Space Command...Since 2002, the SMC commander has assumed the added responsibilities of program executive officer for space, reporting to the space acquisition executive.”¹¹⁸ The space acquisition executive was the Under Secretary of the Air Force, who was given authority to establish and run a separate acquisition process from the standard DOD acquisition overseen by the DAB.^{119,120}

Despite being formally severed from standard acquisition processes, space programs were strongly identified with transformation in general, space systems being cited as one of six explicit transformation initiatives.¹²¹

Most notably, the Transformational Satellite (TSAT) became one of the premier examples of acquisition problems under transformation. Initiated in 2001, TSAT was to be a “leap forward in communications speed, security and availability” by using “laser-based and improved radio frequency transmission systems and high-speed, Internet-like networks that will link communications systems on the ground, in the air, on ships, and in space.”¹²² Besides embodying leap-ahead technology, TSAT was also run according to transformational acquisition initiatives. While never progressing to a development stage requiring a Lead Systems Integrator, the TSAT program contracted out systems engineering and integration, rather than relying on internal government oversight.¹²³ Additionally, TSAT was to follow a “back-to-basics” approach involving incremental block

improvements, which could be interpreted as a spiral development model.¹²⁴ In the end, TSAT was cancelled as part of Secretary of Defense Gates’ culling of many programs identified with transformation, like Future Combat Systems.¹²⁵

WSARA/BBP: 2010–2018

Context

With defense spending increased by 80% in real terms within 10 years,¹²⁶ stories of contracting excess and discontent at how the war in Iraq had been prosecuted,¹²⁷ Congress moved quickly to support a new administration's desire to show progress overseeing defense. It passed the Weapon System Acquisition and Reform Act of 2009 (WSARA), which embraced centralized direction of acquisition.¹²⁸

Mechanisms

WSARA strengthened the tools available to support centralized oversight of acquisition:

- ◆ *CAPE*. Raised cost estimating to a senate-confirmed position, the Director of Cost Assessment and Program Evaluation.
- ◆ *DT&E and SE*. Created OSD directors responsible for development test and evaluation and systems engineering.
- ◆ *PARCA*. Established a senior official for program assessment and root cause analysis.
- ◆ *Assessments*. Required independent assessments of technological maturity and input on requirements from the combatant commanders.
- ◆ *Additional Required Criteria*. Directed the Secretary of Defense to weigh trade-offs of cost, schedule, and performance; consider acquisition strategies to ensure competition; set prototyping requirements; supply greater certifications before certain milestone approvals, including that an analysis of alternatives be performed consistent with guidance; and further review programs suffering cost growth.

The Under Secretary for Acquisition, Technology and Logistics also released guidelines for defense

acquisition practices, termed Better Buying Power (BBP), which went through two more iterations during this period.¹²⁸ Appendix F provides the initial practices BBP sought to encourage.

Effect of Reforms

Though WSARA strengthened the tools available to oversee the acquisition process, it left the process much as it was before: programs managed largely under the direction of service materiel and systems commands overseen by OSD using periodic milestone reviews requiring certain information.

The WSARA/BBP acquisition regime remains too recent to fully gauge its effects on outcomes. The Defense Department's acquisition office claimed improved performance from the modified acquisition process.¹³⁰ GAO found DOD made progress from 2010 to 2016 in improving acquisition outcomes and that programs initiated during the WSARA/BBP regime saw cost decreases from 2016 to 2017, even as most programs experienced cost growth in that year.⁹⁶ Another study found implementation of the reforms varied across components.⁶³

Moreover, some of the lack of cost growth and schedule slip may stem from the significant number of terminated programs in the FY09 and FY11 budget cycles, resulting in fewer programs starting during the era.^{96, 97} Whether this conservatism in the acquisition process reflects solid acquisition oversight or a neglect of needed modernization will not be clear until the military of the future is judged by its operational results.

Despite these early claims of success, Congress remained unsatisfied with acquisition outcomes and took legislative action in the FY16-18 National Defense Authorization Acts to structure a new regime for overseeing acquisition.

Impact on Space Programs

Space acquisition continued to see changes during the WSARA/BBP regime. A dedicated office was established supporting the Air Force Secretary as the Principal Defense Space Advisor and a Defense Space Council was established but oversight remains fragmented.^{98, 99}

Advanced Extremely High Frequency (AEHF) may best represent the WSARA/BBP era in space acquisition. Prior to WSARA/BBP, the AEHF program had been limited to three satellites. With TSAT cancelled, the constellation was extended first to four and then six satellites, with the last two having their cost spread across multiple years.³¹ While the additional AEHF satellites did not provide leap-ahead technology, they did provide a modernized constellation, winning an award for acquisition excellence.¹⁰⁰ After implementation of a new acquisition approach—the evolutionary acquisition for space efficiency, the later AEHF blocks were delivered within a fairly close range of initial cost estimates.

Concluding Observations

Though any engineering problem—especially one pushing the state of the art—poses challenges, the attributes of a well-run development program are broadly accepted. Disagreements arise in how to achieve these desired attributes and how to balance conflicts among them. Each successive acquisition regime covered in this report has sought to advance or temper the initiatives of those prior regimes.

Some key observations from looking across the regimes include:

- ◆ The basic framework for acquisition oversight has remained the same since David Packard’s DSARC reforms: Components execute the programs and present their plans and progress for central oversight at key milestones. No regime sought to replace that model completely.
- ◆ Within that common framework, each regime sought to refine the balance between centralized direction and decentralized execution. No regime succeeded in completely implementing its initiatives, but key mechanisms from each era remain in place.
 - The DSARC milestone framework remains.
 - The Reagan-era FAR remains the overarching guidance for acquisition.
 - The DAB-era Program Executive Officer structure remains.
 - The Acquisition Reform era’s Integrated Product Teams remain.
 - The Rumsfeld-era capabilities-based requirements process remains.
 - The WSARA/BBP-era cost estimates and study guidance remain.
- ◆ Over the same period, but separate from each regime’s other changes, space programs were

overseen both inside and outside the standard process, with a seeming trend toward executing them within the standard process.

- ◆ It is difficult to judge any regime on the performance of any given acquisition program because programs usually overlapped eras.

Though each era was comprised of many different initiatives, and none was ever temporally distinct of the eras preceding and succeeding it, and rarely ever had sole responsibility for any program, each regime succeeded on their own terms more than is commonly acknowledged. Within a common framework, each regime sought to refine how to effectively oversee programs executed de-centrally, creating mechanisms that each successive regime has continued to use.

Looking Forward

At the highest level, these mechanisms are often trying to find a sweet spot that empowers subordinates while ensuring senior leaders maintain oversight and general direction. In general terms, mechanisms often seek to balance centralized direction and decentralized execution. This tension, though, is complicated by the federated nature of the Defense Department. Decentralizing from the Secretary of Defense’s level may in effect centralize decisions at the military services without empowering those who actually run a program.

Recent legislative reforms reflect the difficulty in balancing central direction and decentralized execution. The FY16 National Defense Authorization Act explicitly tried to decentralize acquisition to the military services. Yet the FY17 National Defense Authorization Act then split central OSD acquisition oversight into two parts: a technology advocate and an overseer of the acquisition process. Though these officials directly control only a few specific, major acquisition programs, by being the senior-most officials

responsible for acquisition they will likely be held accountable for acquisition outcomes.

For space programs, this tension is further complicated by the concurrent debate on whether—and how—to manage space programs inside or outside the standard acquisition process. The FY18 National Defense Authorization Act started a move to treat space programs uniquely by vesting “sole authority” for organizing, training, and equipping Air Force space forces in the Air Force Space Commander. The FY19 NDAA then asked the DOD for a report on how to acquire space systems, only to have a DOD report in response to the FY18 NDAA proposal of an entirely new Space Development Agency. All while the president called for a Space Force. It will likely be several years

before we understand what all these changes mean for acquisition, especially for space.

Though no regime has found the perfect solution, especially given the transition costs created by change, each acquisition regime has sought to improve the system and its outcomes. Given the difficulty of finding the sweet spot of centralized direction and decentralized execution, every part of the acquisition system, especially those in a domain as important for the 21st century as space, must accept the inevitability of change while still seizing opportunities presented by new initiatives.

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Appendix A. DSARC-era Principles

Packard's Eight Basic Principles

1. Help the services do a better job.
2. Have good program managers with authority and responsibility.
3. Control cost by trade-offs.
4. Make the first decision right.
5. Fly before you buy.
6. Put more emphasis on hardware—less on paper studies.
7. Use the type of contract appropriate for the job.
8. Eliminated Total Package Procurement [essentially fixed price contracts].

Source: Shannon A. Brown with Walton S. Moody, "Defense Acquisition in the 1970s: Retrenchment and Reform," in Shannon A. Brown, ed., *Providing the Means of War Historical Perspectives on Defense Acquisition, 1945–2000*, (United States Army Center of Military History: Washington, D.C., 2005), p. 145–146.

Initial DODD 5000.01 Program Considerations

- a. System need shall be clearly stated in operational terms.
- b. Cost parameters shall be established.
- c. Logistic support shall also be considered.
- d. Programs shall be structured and resources allocated to ensure that the demonstration of actual achievement of program objectives is the pacing function.
- e. Technical uncertainty shall be continually assessed.
- f. Test and Evaluation shall commence as early as possible.
- g. Contract type shall be consistent with all program characteristics including risk.
- h. The source selection decision shall take into account the contractor's capability to develop a necessary defense system on a timely and cost-effective basis.
- i. Management information/program control requirements shall provide information which is essential to effective management control.

Source: David Packard, "Acquisition of Major Defense Systems," Department of Defense Directive, Number 5000.01, July 13, 1971.

Appendix B. Carlucci's 32 Acquisition Improvement Program Initiatives

1. Reaffirm Acquisition Management Principles
2. Increase Use of Preplanned Product Improvement
3. Implement Multiyear Procurement
4. Increase Program Stability
5. Encourage Capital Investment to Enhance Productivity
6. Budget to Most Likely Costs
7. Use Economical Production Rates
8. Assure Appropriate Contract Type
9. Improve System Support and Readiness
10. Reduce Administrative Costs and Time
11. Budget for Technological Risk
12. Provide Front-End Funding for Test Hardware
13. Reduce Governmental Legislation Related to Acquisition
14. Reduce Number of DOD Directives
15. Enhance Funding Flexibility
16. Provide Contractor Incentives to Improve Reliability and Support
17. Decrease DSARC Briefing and Data Requirements
18. Budget for Inflation
19. Forecast Business Base Conditions
20. Improve Source Selection Process
21. Develop and Use Standard Operation and Support Systems
22. Provide More Appropriate Design-to-Cost Goals
23. Implement Acquisition Process Decisions
24. Reduce DSARC Milestones
25. Submit MENS with Service POM
26. Revise DSARC Membership
27. Retain USDRE as Defense Acquisition Executive
28. Raise Dollar Thresholds for DSARC Review
29. Integrate DSARC and PPBS Process
30. Increase PM Visibility of Support Resources
31. Improve Reliability and Support
32. Increase Competition

Source: Ronald Fox, *Defense Acquisition Reform, 1960-2009: An Elusive Goal*, (Washington, DC: United States Army Center of Military History, 2011), Appendix C.

Appendix C. Packard Commission's Acquisition Recommendations

- Creation by statute of the new position of Under Secretary of Defense (Acquisition).
- The Army, Navy, and Air Force should each establish a comparable senior position filled by a top-level civilian Presidential appointee.
- Recodify all federal statutes governing procurement into a single government-wide procurement statute.
- DOD must be able to attract, retain, and motivate well qualified acquisition personnel.
- The Joint Requirements and Management Board should be co-chaired by the Under Secretary of Defense (Acquisition) and the Vice Chairman of the Joint Chiefs of Staff.
- Rather than relying on excessively rigid military specifications, DOD should make much greater use of components, systems, and services available “off the shelf.”
- A high priority should be given to building and testing prototype systems and subsystems.
- The proper use of operational testing is critical to improving the operations performance of new weapons.
- To promote innovation, the role of the Defense Advanced Research Projects Agency should be expanded to include prototyping and other advanced development work.
- Federal law and DOD regulations should provide for substantially increased use of commercial-style competition.
- DOD should fully institutionalize “baselining” for major weapon systems at the initiation of full-scale engineering development.
- DOD and Congress should expand the use of multi-year procurement for high-priority systems.
- DOD must recognize the delicate and necessary balance between the government’s requirement for data and the benefit to the nation that comes from protecting the private sector’s proprietary rights.
- The President, through the National Security Council, should establish a comprehensive and effective national industrial responsiveness policy to support the full spectrum of potential emergencies.

Paraphrased from David Packard, “A Quest for Excellent: Final Report to the President by the President’s Blue Ribbon Commission on Defense Management,” June 1986, p. xxiv – xxvii.

Appendix D. Acquisition Reform Initiatives of the 1990s

1. Advanced Concept Technology Demonstration
2. Alpha Contracting
3. Alternative dispute resolution
4. Best-value contracting: consideration of cost/performance tradeoffs
5. Better post-award debriefing
6. CAIV (cost as an independent variable)
7. Commercial data and other exemptions for cost or pricing data
8. Commercial engineering drawing practices
9. Commercial quality standards (e.g., ISO 9000)
10. Commercial sourcing: FAR Part 12 procurements
11. Commercial warranties and other product liability issues
12. Competitive sourcing (A-76)
13. Concurrent developmental/operational testing
14. Contractor cost sharing
15. Contractor total system performance responsibility
16. Contractor-maintained design configuration
17. Cost accounting standards exemptions
18. Cost-schedule reporting standards tailored to industry guidelines
19. Direct submission of cost vouchers to DFAS
20. DoD purchase card
21. EDI (electronic data interchange)
22. Elimination of Mil Specs and Mil Standards
23. Elimination of non-value added packaging requirements
24. Elimination of non-value added receiving/in-process/final inspection and testing
25. Elimination of non-value added reporting requirements/CDRLs
26. Elimination of redundant oversight (PMO/Services/DCMC)
27. Enterprise Software Initiative
28. Evolutionary acquisition
29. Improved pre-solicitation phase communication
30. Integrated product & process development
31. Joint government/industry IPTs
32. Logistics transformation
33. Modernization through spares
34. Multi-year contracting
35. Open systems approach

36. Oral presentations
37. Other Transaction Authority
38. Parametric cost estimating
39. Past performance data
40. Performance-based progress payments
41. Performance-based service acquisition
42. Price-based acquisition
43. Prime vendor delivery
44. Program stability
45. Rapid prototyping for software development
46. Reduced number of TINA sweeps
47. Reduction/elimination of contractor purchasing system reviews
48. Reduction in total ownership cost (RTOC)
49. Reduction of multiple Software Capability Evaluations
50. Revised thresholds for certified cost and pricing
51. RFP streamlining
52. Rights in technical data and computer software
53. Risk-based approach to DCAA oversight
54. Simulation-based acquisition
55. Single Process Initiative
56. Streamlined contract close-out process
57. Streamlined Defense Industrial Security Program requirements
58. Streamlined documentation/resolution of nonconforming material issues
59. Streamlined ECP review/approval
60. Streamlined Government property management requirements
61. Survivability/lethality below end-item level
62. Tailored negotiation of forward pricing rates
63. Virtual prime vendor

Source: Christopher H. Hanks, et al., *Reexamining Military Acquisition Reform: Are We There Yet?* (Santa Monica, Calif.: Rand Arroyo Center, 2005), p. Table 2.1: List of 63 Initiatives. Note: Cited because “The [acquisition reform] program that flowed out of this document, [Secretary of Defense William Perry’s Mandate for Change,] still ill-defined and unfocused, would evolve over the next seven years, during which time OSD issued a blizzard of memorandums, directives, and instructions. There never has been an official count of the various Clinton-era acquisition reform initiatives” according to Ronald Fox, *Defense Acquisition Reform, 1960-2009: An Elusive Goal*, (Washington, DC: United States Army Center of Military History, 2011), p. 170.⁴

Appendix E. Transformation Initiatives

- Protect bases of operation at home and abroad and defeat the threat of CBRNE weapons
- Assure information systems in the face of attack and conduct effective information operations
- Project and sustain U.S. forces in distant anti-access and area denial environments
- Deny enemies sanctuary by providing persistent surveillance, tracking, and rapid engagement
- Enhance the capability and survivability of space systems
- Leverage information technology and innovative concepts to develop interoperable Joint C4ISR

Source: 2001 Quadrennial Defense Review Report, Department of Defense, September 30, 2001, p. 41-47.

Acquisition Transformation Initiatives Under Secretary for Defense for Acquisition, Technology and Logistics Strategic Goals Implementation Plan

- Goal 1: High Performing, Agile and Ethical Workforce
- Goal 2: Strategic and Tactical Acquisition Excellence
- Goal 3: Focused Technology to Meet Warfighter Needs
- Goal 4: Cost-Effective Joint Logistics Support for the Warfighter
- Goal 5: Reliable and Cost-Effective Industrial Capabilities Sufficient to Meet Strategic Objectives
- Goal 6: Improved Governance and Decision Processes
- Goal 7: Capable, efficient and Cost-Effective Installations

Source: Ken Krieg, "Defense Acquisition Transformation Report to Congress," Department of Defense, February 2007, p. 6.

Appendix F. Better Buying Power 1.0 Framework

Providing Incentives for Greater Efficiency in Industry

- Leveraging real competition
- Using proper contract type for development and procurement
- Aligning policy on profit and fee to circumstance
- Sharing the benefits of cash flow
- Targeting non-value-added costs
- Involving dynamic small business in defense
- Rewarding excellent suppliers

Adopting Government Practices that Encourage Efficiency

- Adopting “should-cost” and “will-cost” management
- Strengthening the acquisition workforce
- Improving audits
- Mandating affordability as a requirement
- Stabilizing production rates
- Eliminating redundancy within warfighting portfolios
- Establishing senior managers for procurement of services
- Protecting the technology base

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