



*Report of the*  
**Defense Science Board**

# **Creating a DOD Strategic Acquisition Platform**

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# Creating a DOD Strategic Acquisition Platform

**FIXING THE DOD ACQUISITION PROCESS IS A CRITICAL NATIONAL SECURITY ISSUE—REQUIRING THE ATTENTION OF THE SECRETARY OF DEFENSE. ... THE INCOMING LEADERSHIP MUST ADDRESS THIS CONCERN AMONG ITS TOP PRIORITIES, AS THE NATION'S MILITARY PROWESS DEPENDS ON IT.**

The United States must be prepared to respond to a broad set of national security missions, both at home and abroad—strategic deterrence, conventional and asymmetric warfare, and defense of the homeland are among the most prominent. Yet many deficiencies exist in defense capabilities needed to support these missions—systems are aging and technologies are becoming obsolete. Systems such as the B-52 bomber fleet, cruise missiles, tanker aircraft, the nuclear stockpile, and the strategic force are reaching the end of their service. Intelligence, surveillance, and reconnaissance systems are becoming less effective in the face of rapid advances in technology. The interoperability of communication systems continues to be a major concern on the battlefield.

A robust acquisition process is critical to sustain a strong arsenal of effective weapon systems. When hostilities in Iraq and Afghanistan draw to a close, it is realistic to anticipate reductions in the defense budget. At the same time, the Department of Defense (DOD) will need to refresh materiel depleted in those wars, while continuing the process of replacing aging systems—all of which increase the need for a more effective and efficient acquisition process. Capable adversaries who are adept at acquiring and adapting weapons from widely available commercial technology are yet another factor. These pressures are coming to bear at the same time many observers have recognized that the Department of Defense acquisition process has been broken for some time.

Fixing the DOD acquisition process is a critical national security issue—requiring the attention of the Secretary of Defense. DOD needs a strategic acquisition platform to guide the process of equipping its forces with the right materiel to support mission needs in an expeditious, cost-effective manner. The incoming leadership must address this concern among its top priorities, as the nation's military prowess depends on it.

This report offers recommendations for rebuilding the defense acquisition process, drawn from numerous reports over the past few years prepared by the Defense Science Board, an advisory body to the Secretary of Defense. We believe this report offers useful insight for the Secretary of Defense and his transition team to address critical acquisition challenges.

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# Table of Contents

<b>Fixing the acquisition process is a national security issue .....</b>	<b>1</b>
Today, the defense acquisition process takes too long to produce weapons that are too expensive and often technically outdated by the time they are fielded.....	1
There have been many attempts to fix the acquisition process, but none, as of yet, have been successful.....	4
<b>Buy the right things.....</b>	<b>8</b>
Fixing acquisition begins with buying the right things to support national security objectives.....	8
<b>Select an effective leadership team, with proven, relevant experience.....</b>	<b>13</b>
The acquisition process cannot be fixed without proven, experienced leadership in the Office of the Secretary of Defense and the military services.....	13
Leadership also plays an important role in ensuring that program and process owners and stakeholders are aligned with common goals.....	15
<b>Reform and streamline the acquisition process.....</b>	<b>17</b>
The current state of the acquisition process is unacceptable and in desperate need of reform.....	17
<b>Improve acquisition execution .....</b>	<b>31</b>
Acquisition improvements are not enabled by policy and process reforms alone. Those changes lay the framework for success, but must be coupled with efficient, effective execution led by experienced leaders .....	31
<b>Urgent action is needed.....</b>	<b>38</b>
Congress can and must be part of the solution.....	38
<b>References .....</b>	<b>40</b>



# Fixing the acquisition process is a national security issue

**Today, the defense acquisition process takes too long to produce weapons that are too expensive and often technically outdated by the time they are fielded.**

Typical major system acquisitions take 10 to 15 years, while new product development in the commercial sector of similarly complex systems takes one-third to one-half of that time. Acquisition of information technology, on which many defense systems are critically dependent, also exceeds typical commercial development time—taking three to four times as long. These development times are far outpaced by the rapid advances in technology, which means that subsystem technology can be one or two generations old by the time a system is provided to war fighters in the field—unless upgrades are incorporated before the system is fielded. Furthermore, programs often have large cost overruns, long schedule delays, and unsatisfactory product quality and performance.

At the same time, the nation faces very adaptive adversaries. The United States is no longer in a unique position of technological supremacy. Many types of advanced technology are readily available on the world market. Adversaries are becoming very adept at fashioning new weapon capabilities from commercially available technology—“good enough” systems are developed and fielded quickly. And, they are often far more agile in doing so than the United States. Most military planners recognize that a robust military strategy combines a formidable offense with a capable and comprehensive defense. But some current adversaries can target U.S. vulnerabilities and time their attack without concern for the risk of U.S. offensive retaliation—as they have little of value to put at risk. Adaptive adversaries are able to identify U.S. vulnerabilities and create effective systems to exploit them—one example is improvised explosive devices that became prominent early in the Iraq conflict and continue to plague U.S. forces. When rogue states

and terrorists employ this strategy, it creates a critical challenge for the nation. Thus, we must enhance our ability to rapidly and effectively transition commercial and military-unique products to our war fighters in the field.

While this scenario applies to all weapon systems, information technology presents a somewhat different set of challenges due largely to the fact that it is an important enabler for so many defense capabilities. It underlies the nation's ability to gain better intelligence, better situational awareness of the battlefield, better communications, and more precision in weapon system delivery. In fact, the use of information technology is pervasive, from administrative systems for managing business processes, to embedded subsystems in major weapon systems—comprising as much as 90 percent of the cost of some new systems.

Despite its crucial importance, the Department's ability to acquire information technology is fraught with problems. Driven by the short half-life of commercial information technology, hardware supportability, software applications, and evolving operational requirements, the need for continuous upgrades and product improvement is a reality that must be accommodated by the acquisition process. In addition, it is often difficult to technically validate these programs to ensure that what is being delivered is in fact what is expected, raising the potential for unknown system vulnerabilities.

Furthermore, many information technology systems are managed as joint programs, ultimately used by more than one of the military services. Systems such as intelligence, surveillance and reconnaissance; command and control; and communication systems are often acquired as joint programs to ensure interoperability and common fielding dates among the user services. As a result, managing these programs requires joint cooperation among the services—an endeavor that often poses a challenge to effective acquisition. Additionally, achieving and maintaining stable budgets and system interoperability—systems developed to operate with many others on the battlefield—remain important issues.

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**Finally, the acquisition of services receives far less attention than that of materiel, yet it is a growing part of the defense budget—representing about 50 percent of the acquisition budget, which totaled nearly \$400 billion in fiscal year 2008.<sup>1</sup>** Services range from support to the battlefield, to airlift and logistics, to security services, janitorial services, and studies and analysis. Such activities are not only necessary, but also advantageous to contract as services so that DOD personnel can devote their time to the jobs they were trained to do. Yet it is still reasonable to ask whether all such contracts are necessary and whether they could be contracted more efficiently. Service contracts should be subjected to scrutiny and be required to meet certain criteria similar to materiel acquisition.

The problems of acquisition execution outlined above have been well known for years. Yet an even more important deficiency is the process of determining what to buy. The strategic plan for acquiring military capabilities is only loosely aligned with national security objectives and the military missions to achieve them. The military services are tasked to train and equip the nation's forces and they often control the input into the process—defining the capabilities to be acquired. The combatant commanders, who actually use forces and equipment in the field to execute missions, have little input in determining which next-generation capabilities to acquire. Often, present programs reflect past missions and seldom adequately support joint needs, despite the fact that ongoing combat experiences demonstrate new joint needs and interoperability issues. Clearly the driving agenda item the Department needs to address is improving the process of evaluating and deciding what to buy to support the highest priority national security mission needs.

The shortcomings addressed here point to an acquisition process that is not adequately meeting the needs of the Department of Defense. Fixing this process must become a departmental priority—led by the Secretary of Defense.

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1. Data derived from the Federal Procurement Data System—Next Generation (FPDS-NG); <https://www.fpds.gov> [March 2009].

## **There have been many attempts to fix the acquisition process, but none, as of yet, have been successful.**

The defense acquisition process has been studied for decades—by the Packard Commission, the Government Accountability Office, the Defense Science Board, think tanks, commissions, and many other organizations, including the Department itself. For decades, these studies have identified numerous flaws—problems with bureaucracy, accountability, overlap of authority, inefficient processes, and inexperienced leadership. And over the years, the Department has made a series of attempts to “fix” acquisition—usually at the direction of the Under Secretary of Defense for Acquisition, Technology, and Logistics. Yet problems persist—major system acquisitions still take too long, costs are overrun, and concerns remain over product performance and quality.

Why have previous efforts so often failed? In part, it is because they fail to address the root causes of the problem, focusing instead on re-engineering the mechanics of the acquisition decision process. Many problems appear to be caused by the use of immature technology, requirements “creep,” or funding instability. **Such problems, however, are really only symptoms of the lack of experienced judgment on the part of Department personnel who structure acquisition programs in a way that will almost certainly lead to failure.**

**Moreover, many organizations in DOD are often not aligned with departmental acquisition goals and objectives.** The staff of the Office of the Secretary of Defense (OSD)—including the Director, Program Analysis and Evaluation; the Comptroller; the Assistant Secretary of Defense for Networks and Information Integration/DOD Chief Information Officer; Director, Defense Research and Engineering; and Director, Operational Test and Evaluation—the military services, and the Joint Staff are all power centers that not only often fail to be aligned with each other, but sometimes are not even aligned within themselves. Many of the

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Secretary's advisory staff, who are not accountable to deliver acquisitions, can also stall a program's ability to proceed through the process while awaiting their input.

Perhaps the most important reason that previous efforts have failed, however, is that the problem has been left to the Under Secretary of Defense for Acquisition, Technology, and Logistics. Effective acquisition is a challenge that is much bigger and broader than the authority or scope of power of that office. Many of the organizations, functions, and processes that support acquisition are not, and should not be, the responsibility of the acquisition under secretary. Fixing defense acquisition is a challenge that can only be successfully addressed by the Secretary of Defense and it should be among his top priorities. The Secretary not only must lead the charge within DOD to fix the acquisition process, but also must inform the Congress of departmental actions and enlist its support for his agenda, lest Congress act independently in a way that undermines his efforts.

There is no silver bullet for "fixing" acquisition. As noted previously, many studies have identified many problems and offered many solutions. One particular difference in the findings and recommendations discussed in this report, drawn from a decade of past studies by the Defense Science Board, is in how the problem is defined. Fixing acquisition challenges must begin with leadership action by the Secretary of Defense. A plan to address acquisition processes should focus not only on "how" the Department buys material, but also "what" materiel the Department buys, who is involved in the process, and whether support systems help or hinder.

The Secretary of Defense must create a strategic acquisition management platform comprised of four critical elements.

### **1. Buy the right things.**

The strategic military planning system, DOD's regime for deciding "what to buy," has a weak analytic foundation. When we buy the wrong thing, we blame the acquisition system. But that system is responsible for "how to buy."

Before fixing acquisition processes, the Secretary must reform the strategic military planning system and create a genuine “business plan” for DOD. This resource-balanced plan should be developed with greater involvement of the regional combatant commands and better use of systems engineering, and modeling and simulation.

## **2. Select an effective leadership team.**

Proven, relevant experience is needed in the Office of the Secretary of Defense, the military departments, and defense agencies. Today, many people are inexperienced, from leadership to program managers. Few have a personal track record of repeated successes at acquisition. Trial-and-error and on-the-job training can be really expensive. The Department needs to hire and assign individuals with proven records of acquisition success. At the program level, this may mean facing the possibility of not doing a program until the right people are available.

## **3. Reform and streamline the acquisition process.**

A single acquisition process cannot meet the demands of acquiring major systems, commercial derivatives, and information technology systems, as well as rapidly fielding critical war fighting needs, especially in a time of crisis. The process of buying major systems, information technology systems, and commercial derivatives needs to be streamlined with strong, up-front systems engineering support. The case of information technology presents unique challenges—in stand-alone systems, embedded systems, and net-centric infrastructure. A new decision process is needed that recognizes the rapid advances in information technology and plans for frequent and efficient upgrades after delivery. The ability to field critical war fighting needs also requires a new approach—a standing acquisition capability that can fulfill these requirements in a timely way, as there is little doubt that the need will continue.

#### **4. Improve acquisition execution.**

Acquisition improvements are not enabled by policy and process reforms alone. They must be coupled with efficient, effective execution. Key areas where improvement in management and execution are needed include: product development, contract award and management, acquisition workforce, acquisition integrity, and process metrics. Central to these improvements is experienced personnel—in leadership, in the acquisition workforce, and, equally important, in the contractor base. Up-front attention to systems engineering during product development, as well as keen attention to acquisition integrity, are also essential.

Many may say that they are already doing what we recommend. In fact, the recommendations of this report are essentially common sense and one may find each concept used in an isolated case. The real message is that a comprehensive approach must be used uniformly across the defense enterprise to be successful. If “they were already doing this” comprehensively there would not be problems with defense acquisition or need for this report.

As has been mentioned, there is no “silver bullet” to fixing defense acquisition. But, in the view of the Defense Science Board, the Department can improve its acquisition processes—with the Secretary of Defense in the lead, supported by Congress, and focused on each of these essential four areas, none of which can achieve results alone. With a growing deficit, rising costs, and declining output, it is not an option to let the status quo continue. Fixing acquisition is a national security issue. We do not want to find ourselves wringing our hands over the state of our national security because we chose not to act.

# 1 Buy the right things

## **Fixing acquisition begins with buying the right things to support national security objectives.**

Fixing the acquisition system—“how to buy”—is dependent on fixing the strategic military planning system—which includes decisions on “what to buy.” When we buy the wrong things, we blame the acquisition system, when the problem lies with the strategic planning system. The Department’s regime for deciding what to buy has a weak analytic foundation and must be reformed.

The Department of Defense has a large formal process, the Quadrennial Defense Review, to establish national security objectives and the strategic direction and missions to support them. It is common knowledge, however, that recent reviews have had little impact on changing the acquisition agenda of the military services. In such a forum, the Services tend to “protect” their current agenda and programs, while new or different acquisition alternatives or programs to meet urgent needs have difficulty surviving.

The operational leaders—the combatant commanders—are not effectively represented in these processes. Since these commands are where the products of acquisition come together as an integrated force, they should be more involved in the issues of aligning what is to be acquired to the strategies of their mission responsibilities and the ability of these systems to operate together. While, currently, they often bring more tactically-oriented needs to the table, they should be tasked to play a larger role in the development of longer-term strategies for meeting their responsibilities, in order to lay a stronger analytic foundation for acquisition decisions.

The commands also bring a sense of urgency and reflect the need for systems that can effectively operate with others on the battlefield—commonly referred to as

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interoperability. For decades we have fielded systems that lack needed interoperability and do not adequately support joint intelligence, surveillance, and reconnaissance and munitions needs; and we have struggled with less than acceptable communication systems. Instead, major platforms tend to remain at center stage of the acquisition agenda. The consequences include soldiers resorting to using cell phones to communicate in war zones in Iraq and Afghanistan, among other issues.

The Department should define critical capability needs to support each mission. Today, “requirements” are used to define capability needs, implying that nothing less than a specified set of criteria is sufficient. Instead, a more prudent answer is to buy the best capability affordable, in the quantity desired, and fielded in as timely a manner as possible. Such a strategy does not preclude development of revolutionary systems like stealth aircraft, but it does encourage incremental spiral development and system block upgrades to improve the timing of fielded capability while lowering the overall risk.

To identify the specific capability, a clear analysis of alternatives and a comprehensive systems engineering analysis are required—including man-in-the-loop simulations to test system effectiveness and trade-offs. Such an approach results in a clearer understanding of the value of performance characteristics, the costs and benefits of various features, and a time-to-field that is based on a thorough assessment of technology development needs. It is important to note that neither intuition nor experience alone will suffice. It is also essential to determine what can be accomplished through innovation to avoid the common pitfall of “preparing for the last war” rather than looking to the future.

With the type of analytic underpinnings described here, informed decisions on “requirements” can be made in light of effectiveness, cost, quantity to buy, and time-to-field. And a realistic acquisition schedule can be developed. This understanding serves as a useful basis to program

**AT PRESENT, THERE IS NO PLAN IN DOD THAT QUALIFIES AS A BUSINESS PLAN ... SUCH A PLAN REQUIRES GREATER INVOLVEMENT OF THE REGIONAL COMBATANT COMMANDS AND A STRONG ANALYTIC FOUNDATION.**

managers as they inevitably deal with unforeseen problems that will arise and require additional trade-off decisions during the course of the acquisition process. Program managers ultimately need the authority and knowledge to manage such trade-offs and to prevent requirements from growing inappropriately. They must also have the support of departmental leadership.

How can the Department reorient its decision-making processes to ensure that it buys the right things?

**The most important action that the Secretary of Defense can take is to reform the strategic military planning system and establish a genuine business plan for DOD to discipline resource allocation in support of national security objectives. The plan must be comprehensive in identifying the objectives of the Department and the human and financial resources needed to accomplish them. Developing this plan requires greater involvement of the regional combatant commands and a strong analytic foundation through better use of systems engineering and modeling and simulation.**

This resource-balanced plan must by necessity include an outline of what to buy in light of the nation's security priorities, and ensure that each program is fully funded from acquisition to sustainment. Specifically, this means including in the plan materiel acquisition objectives, planned fielding dates, and the resources necessary to acquire and insert them effectively into the field. In other words, the plan must relate resources to mission purpose. In effect, such a plan will discipline the resource allocation and acquisition processes and will give decision makers a clear understanding of the need for, and impact of, resource decisions. At present, there is no plan in DOD that qualifies as a business plan.

The elements of the business plan should clearly define military missions needed to support national security objectives and outline how the Department will accomplish these objectives—what materiel to buy, how it should be supported, when it should be

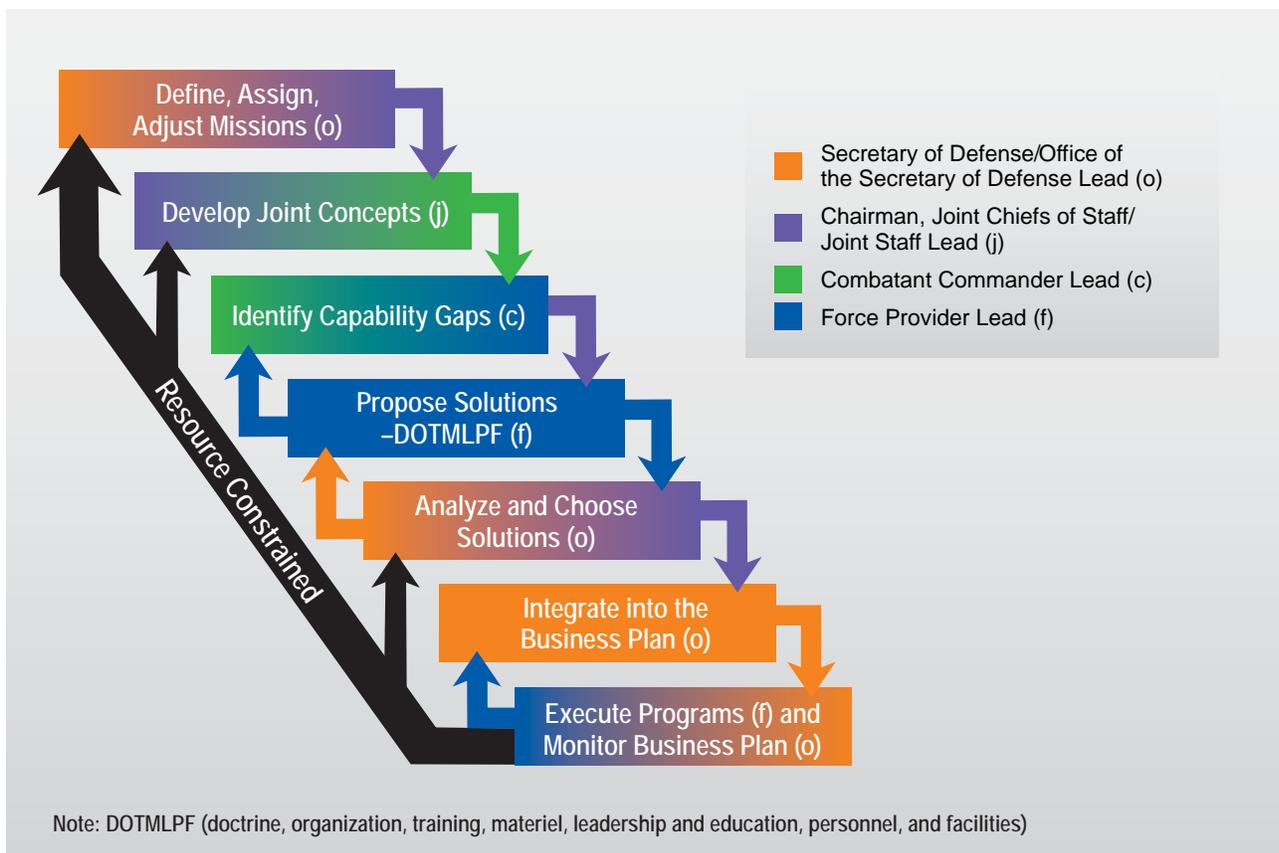
operational in the field, and what forces to train and prepare. The plan should also identify who will be responsible for execution of each element of the plan as well as the allocated resources. It is necessary for the plan to be enforced to ensure accountability. This plan is intended to be a high-level document, typically not more than 40 to 50 pages in length.

To create and execute such a plan requires involvement of key decision makers in the Office of the Secretary of Defense, the Joint Staff, and the military departments, beginning with the Secretary of Defense. Key steps in the process are as follows:

- The Secretary of Defense, supported by the Chairman, Joint Chiefs of Staff, defines, assigns, and adjusts the priority missions in support of the national security strategy.
- The Chairman leads the process to develop joint concepts, with strong participation from the combatant commanders.
- The combatant commanders identify needed capabilities, with support from the Joint Staff, and active involvement from the force providers.
- The Secretary of Defense, with support from the Chairman, the Joint Staff, and the force providers chooses solutions. The Secretary and staff integrate the solutions into the business plan, specifying what is to be done, in what time period, with what resources, and what output.
- Force providers are then fully accountable for delivering the capability on time and within allocated resources, while the Secretary's staff monitors the overall process.

An important aspect of the process is feedback. Earlier steps are informed by experience throughout the process in a continuous cycle of change within resource constraints. The business plan provides discipline for the system—the single roadmap that all players in the process must follow.

A business plan will help to ensure better management and accountability of programs that cross individual service lines. Joint programs, such as intelligence, surveillance, and reconnaissance systems and communications capabilities, are critical to mission success. But these programs are typically not well managed in the acquisition process. The military services tend to give them low priority relative to their “own” programs that tend to be more platform-oriented. With a business plan that identifies what to buy and who is responsible, and ensures funding, appropriate priority will be given to all programs—joint and service specific.



Creating and executing a multi-year business plan would involve key decision makers within the Department. It would enforce accountability and provide a clear understanding of the need for, and impact of, resource decisions.

# Select an effective leadership team, with proven, relevant experience

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**The acquisition process cannot be fixed without proven, experienced leadership in the Office of the Secretary of Defense and the military services.**

People are inexperienced. From the leadership to program managers, virtually nobody has a personal track record of repeated success at acquisition. Trial-and-error and on-the-job learning can be really expensive.

The Packard Commission made this point clear when recommending that the acquisition leadership have “a solid industrial background.” Yet the Commission’s intent is often ignored when the rules are stretched so that the acquisition executives in OSD and the services are appointed with little or no proven, relevant, or successful business experience. Without relevant experience to guide decision-making, these leaders often rely on the bureaucracy to make decisions for them.

Lack of seasoned leadership is part of the many problems plaguing current acquisition programs. Leadership shortcomings result in programs that are not structured for successful execution due to a plethora of difficulties:

- lack of sufficient up-front analysis of alternatives
- poor systems engineering support
- inadequate performance, cost, and value trade-offs
- poorly designed product development strategies
- poor management of technical risk
- growing requirements
- selection of inexperienced contractors
- poor contract incentives
- budget instability

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Since people tend to debate what they understand, contracting, budgetary, and organization design debates crowd out those involving product development management issues, technical and production challenges, concepts of operations, and systems engineering. Skills in program administration are often confused with skills in acquisition management ability.

Solving these problems begins with selecting the right leaders who can make decisions based on judgment gained through experience. It also requires proper incentives—elements essential for success. Incentives can be both positive and negative—from recognition of outstanding performance to public visibility of inadequate performance. Today’s leaders require a combination of business, technical, and human resource management capability. Our nation can afford nothing less than the best, experienced people for these critical acquisition positions.

Along with experienced leaders, the civilian and military workforce must be upgraded as well. The first step is to select managers of major systems programs—that is, program executive officers and program managers—that have demonstrated successful performance in managing programs of increasing complexity. Program success is more likely, even if a program is delayed, if the right leadership can be put in place from the start so that the program initiates with goals and objectives that can be realized. The “best available” may not be good enough. It is up to the acquisition under secretary to establish such guidelines and ensure that they are followed.

**The Department must hire and assign individuals with proven records of acquisition success—even facing the possibility of not doing a program if the right people are not available.**

The Secretary of Defense should issue guidance that top acquisition appointments be filled with individuals who have proven, successful, and relevant commercial experience.

The Under Secretary of Defense for Acquisition, Technology, and Logistics should require that program executive officers and program managers have

demonstrated successful performance in managing programs of increasing complexity before appointments are made to lead major systems programs.

**Leadership also plays an important role in ensuring that program and process owners and stakeholders are aligned with common goals.**

**The personal interests of many individuals involved in the acquisition process do not always align with the interests of the nation. It is in the self interest of too many people not to fix the acquisition system: they are financially rewarded and their career is sustained by keeping things as they are.**

Major programs experience delays and interruptions because senior department leaders—in the Office of the Secretary of Defense, the military services, and the Joint Staff—are not aligned with common goals. It is not unusual for the lead times for major program reviews to extend for months because of problems identified late in the game or brought forward in an untimely manner by various organizations in the Department.

The input of acquisition advisors—Director, Program Analysis and Evaluation; Assistant Secretary of Defense for Networks and Information Integration/Chief Information Officer; Director, Defense Research and Engineering; Director, Operational Test and Evaluation; the Comptroller, and others—is valuable to the acquisition process. Their insight can lead to more successful program outputs. But it must be provided in a timely manner—starting at program initiation and continuing throughout program execution. It should be viewed as a failure of these offices if the first identification of a problem is at a major program review. This observation is not to be taken as a wish to suppress problems or issues. Rather, as a need to identify problems as soon as they are evident and work as a team to eliminate them.

Further, it is often the case in the military departments for the technical authority, which oversees standards and military certification, to operate outside the

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programmatic chain of command—independent from program management and systems engineering. A common entity supervising both the technical authority and program management often exists only at the highest levels. This means that those responsible for technical authority have no organizational responsibility for meeting cost and schedule requirements. Yet their input can have a significant impact on program decisions, and in turn program schedule and cost.

An inflexible and potentially adversarial separation of these two functions can often hamper useful program trade-offs, even in programs where such trade-offs were intended at program initiation. Instead, all those involved in the acquisition process—whether technical authority or program management—must be aligned along a common goal of achieving successful, timely program execution. After all, it is the war fighter who is ultimately affected when needed capabilities are not fielded in a timely manner—with the ultimate cost being needless loss of life.

The Secretary of Defense must take action to discipline the program review and execution process so that programs can proceed according to planned schedules. Program managers should not have to wait for stakeholder input before proceeding to program milestones—it should be provided throughout the acquisition process so that identified problems can be resolved long before major decision points arise. Once options are reviewed and due process of the various stakeholders has been considered, the Secretary must ensure that department leadership supports the decision and works as a cohesive team to achieve the desired goals. This means developing meaningful incentives for positive performance, including rewards and recognition. And, when necessary, levy appropriate discipline to those who defy Department decisions or try to game the system.

**The Secretary should direct all leaders in the Office of the Secretary of Defense, the military services, and the Joint Staff, to align behind acquisition decisions and support program execution in a timely manner. The Secretary should follow through with scheduled periodic reviews of actual program performance, and should reward and discipline staff accordingly.**

# 3 Reform and streamline the acquisition process

**STREAMLINING MEANS FEWER BUT MORE EXPERIENCED PEOPLE, FEWER COMMITTEES, FEWER REVIEWS, AND MORE EFFECTIVE AND EXPERIENCED LEADERSHIP—WHICH SHOULD LEAD TO MORE EFFICIENT EXECUTION WITH LESS RISK.**

## **The current state of the acquisition process is unacceptable and in desperate need of reform.**

It is critical that the Department guide its acquisition decisions with a business plan that supports the nation's security objectives. But once a needed capability is identified under that plan, it is also critical that it be acquired within a streamlined decision process that can ensure timely, effective execution.

As discussed at the outset of this report, programs today take too long to procure and are often fielded with last-generation technology. Many programs have large cost overruns and deliver performance and quality that are less than desired. But even without cost overruns, programs are often approved without adequate funding, which creates serious execution problems throughout program acquisition.

Moreover, the current acquisition process must be disciplined with an infusion of effective leadership. Milestone decision reviews should take a few days of preparation, not the months and months currently required, which detracts from the real work of system development and acquisition. Streamlining is necessary to allow for fewer but more experienced people, fewer committees, fewer reviews, and more effective and experienced leadership. It would also lead to more efficient execution with less risk. By engaging stakeholders early and frequently during the acquisition process, more efficient decision reviews could be achieved.

**The Secretary of Defense should task the Under Secretary of Defense for Acquisition, Technology, and Logistics to establish more streamlined acquisition processes.**

While many disparate processes are not desirable, today's single acquisition process—geared toward major system acquisitions with significant technology development—is not effective at meeting the wide range of acquisition needs the Department must satisfy. These needs include major systems, commercial derivatives, information technology, and rapid fielding of new or adapted capabilities. Thus, tailored processes that take into consideration the unique attributes of these major classes of systems are needed.

***The major system acquisition process needs to be infused with more in-depth systems analysis during the early stages of the process and planned using the tenets of spiral development and block upgrades, to the degree possible.***

More thorough analysis is needed at the outset of system development and during key aspects of the development process, to include system and subsystem prototyping. Along with more in-depth and disciplined analysis, the acquisition plan should include an outline for acquiring new capabilities in multiple, shorter-phased increments—referred to as block upgrade acquisition made possible by incremental spiral development. An initial, base capability, that is operationally useful to the war fighter, is fielded and then enhanced in subsequent blocks until the full capability objectives are reached. As each increment is acquired, operational experience and experimentation will provide invaluable insights into what is needed and achievable in subsequent increments. It is recognized that each fielding must be accompanied by adequate training. Therefore a judicious balance must be made between fielding increments and the ability to train new capability without adding chaos in the field.

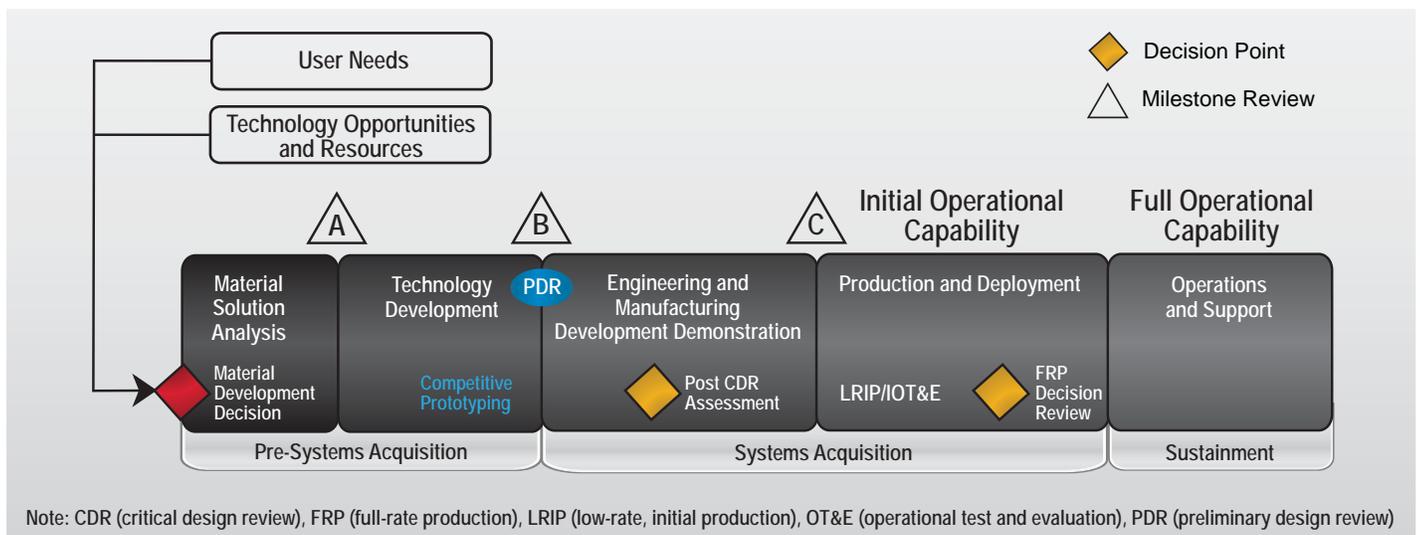
**The goal of this approach is to dramatically reduce the time between identifying a new operational need and fielding operationally useful equipment.**

It helps to moderate risk by providing a steady stream of increased military capability that can be delivered on time and within budget. In contrast, the tendency today is toward giant single steps with high cost, schedule, and performance risk.

The Department of Defense has recently revised the acquisition decision process for major systems, codified in DOD Instruction 5000.02. One of the significant enhancements of the revised process is greater emphasis on system engineering and analysis in the early stages—the period where trade-offs can still be efficiently made based on the maturity of technology development and input from the war fighter as early increments of capability are released.

Key elements of the revised major system acquisition process are as follows:

- Begin the process with a critical analysis of alternatives prior to any decision milestones. Continue throughout the program with systems engineering and program analysis of alternatives to inform program manager decision-making. An effective analysis process will help properly evaluated program cost and schedule become recognized objectives during execution, along with performance. This approach is not feasible if the strict use of the “requirements” concept is followed. Replacing requirements with “capability needs” allows a meaningful trade-off to be made between performance, cost, and date-to-field.



**The revised acquisition decision process for major systems places greater emphasis on system engineering and analysis in the early stages to allow input from the war fighter and trade-offs based on the status of technology development.**

**UPFRONT ANALYSIS  
AND PROTOTYPING  
ARE CRITICAL  
INGREDIENTS FOR  
PROGRAM SUCCESS.**

- All acquisition programs should begin at a common entry point, with a materiel development decision—the mandatory start of the process. Programs should no longer enter in the middle of the process. Programs should not require or permit traditional technology development to be schedule-controlling events.
- Prototyping should begin during the technology development phase, and should be inserted whenever useful during the development process. Competitive prototyping is useful for initial contractor down selection. For systems that are likely to be procured over decades, such as fighter aircraft, prototyping of technology demonstrators should be used continuously to prepare for system renewal and as a test bed for emerging capabilities.
- A preliminary design review should be conducted before a commitment to final engineering design and manufacturing development is made. As part of this review, technology and production readiness should be assured.
- Program managers should consider using a configuration steering board to oversee system capabilities in order to minimize the tendency for desired capabilities to grow during the acquisition process—thus disciplining the system to incremental block upgrades.

These process changes should significantly improve the quality of product delivered through the defense acquisition process, contain costs, and dramatically shorten delivery times for major systems, by as much as one half. But to be successful, they must be accompanied by the effective leadership discussed previously in this report—as process changes alone, without experienced judgment, will have little impact.

***Buying commercial or commercially derived systems (either domestic or foreign) presents a significant opportunity for the Department of Defense.***

The globalization of technology and production means that defense-funded programs no longer drive technology development in many areas, and in fact,

**ACQUISITION OF  
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MANAGEMENT  
APPROACH.**

commercial technology now leads DOD in many areas. As a result, many advanced capabilities are available on the commercial market and offer an important option for supplying U.S. forces. While a military system designed from the bottom up can deliver a total solution to an identified capability, the goal of commercial or commercially derived systems is to acquire an “80 percent” solution that can be fielded rapidly and at a much lower cost and risk. The challenge is to successfully reap these advantages without the pitfalls typically experienced—challenges such as modifying the system to the extent that it no longer offers the advantage of buying commercially, inflexible procurement processes, or imposing military specifications without supporting systems engineering and analysis.

Acquiring commercial products requires a different mindset and a different management approach. Many acquisitions, such as the Littoral Combat Ship and the Presidential Helicopter Replacement, have faltered. Troubled programs appear to have a common failure paradigm—the failure to establish a clear understanding of program objectives that are well communicated at the outset, so that all involved, including DOD and contractor personnel, are working toward a common objective.

Further, many DOD organizations exist to maintain and support “military standards” and, thus, have technical authority over procurement standards. While such standards are appropriate for guiding the design and development of new DOD systems to be used in hostile combat environments, they are not always appropriate for procurement of commercial or commercially derived systems. In the case of commercial systems, cost, time to fielding, and other considerations may outweigh the need to infuse many or all military specifications and standards. Such trade-offs need to be made early and established clearly in program objectives.

Lack of experience in working with commercial products is another challenge. Problems arise when traditional DOD integrators, acting as prime contractors, have little experience with the particular commercial products they have contracted to

deliver by sourcing through a subcontract from a commercial vendor. In addition, problems arise when commercial products are modified to the point where they are more “custom” than “commercial.”

Buying foreign systems is another option that needs clarification in the acquisition process. Problems are similar to buying domestic commercial systems and the needed guidance is similar. Many government requirements (such as the Berry Amendment, Naval Vessel Rules, International Traffic in Arms Regulations, and others) directly contradict today’s design and manufacturing trends. The current rules significantly harm national security options by limiting DOD access to commercial and global technologies and allies’ markets. All of these factors must be considered or revised when buying commercial or commercially derived systems, whether domestic or foreign.

Importantly, DOD’s desire to acquire commercial systems should not be based on a presumption that commercial suppliers are interested in doing business with the Department. In fact, the onerous nature of government rules and requirements act as a deterrent to many potential suppliers. DOD needs to put incentives in place to encourage commercial and foreign suppliers.

**The Under Secretary of Defense for Acquisition, Technology, and Logistics needs to clarify the objectives and process for acquiring commercial derivatives. The major systems acquisition process, with a modified technology development phase, is appropriate to support commercial product acquisition.**

***Acquiring information technology requires a different approach from major system acquisition—one that recognizes the unique attributes of information technology development and integration.***

**More and more of what DOD acquires is information technology (IT)—stand-alone systems, embedded systems, net-centric infrastructure, and business systems. We are at the fundamental limits of what we can do when acquiring IT: fundamental human limits in precisely and accurately specifying what is needed;**

**CONTINUOUS  
CHANGES AND  
UPGRADES IN  
INFORMATION  
TECHNOLOGY ARE  
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THAT MUST BE  
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A NEW ACQUISITION  
PROCESS IS NEEDED  
THAT ALLOWS FOR  
RAPID ADVANCES IN  
TECHNOLOGY, AND  
FREQUENT AND  
SWIFT UPGRADES  
AFTER DELIVERY.**

**fundamental technological limits in verifying that what we specify is actually delivered. In partial remedy, our acquisition system needs to enable swift and repeated upgrades in our IT systems, which is also needed to keep up with the ever changing improvement in technology.**

Spending on information technology is rapidly growing in both embedded and stand-alone systems. IT system acquisition and IT upgrades to existing weapon systems represent a significant and growing percentage (up to 90 percent) of some current acquisitions. These acquisitions are taking longer and longer and the current process is too slow to keep up with advances in commercial technology to the point that fielded systems can be delivered with one- or two-generation old technology if there are no upgrades during the acquisition process. Furthermore, many current programs are exceeding cost and schedule baselines.

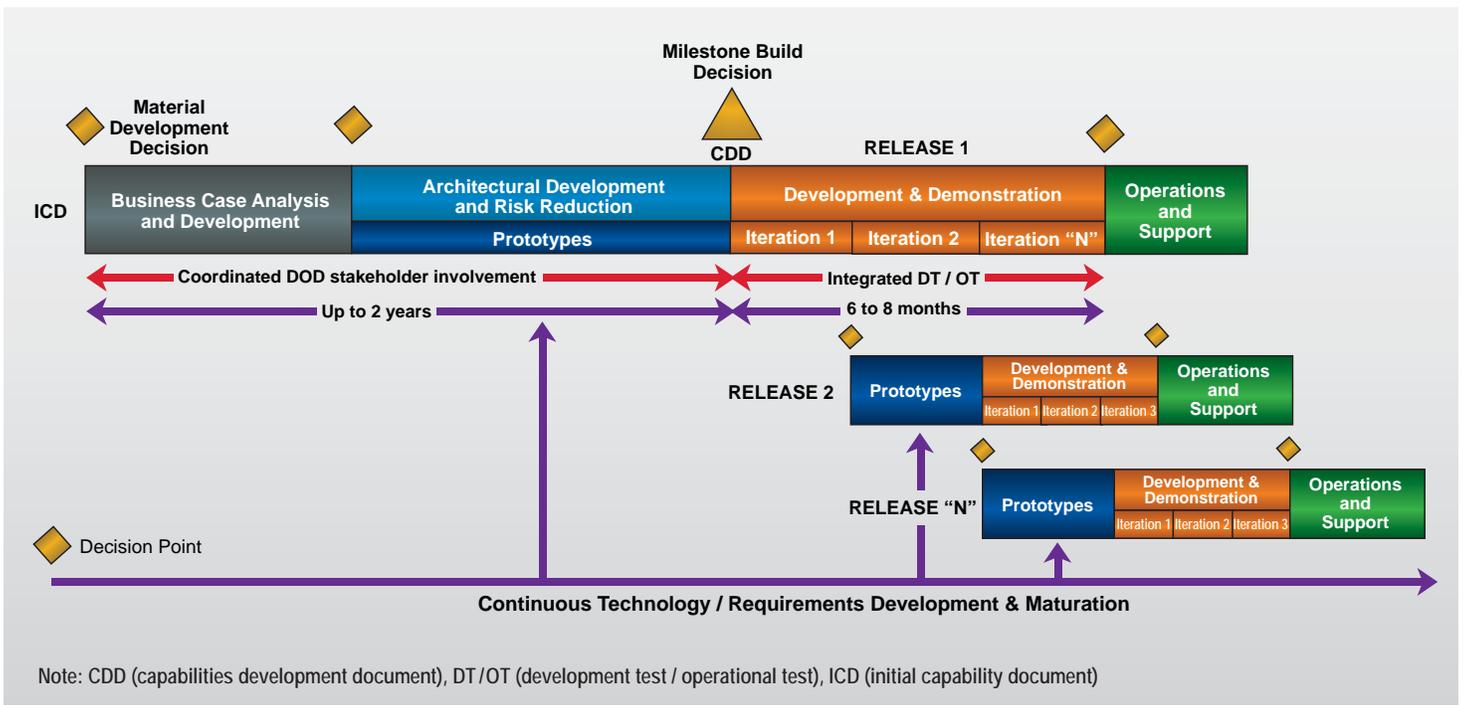
Continuous changes and upgrades in information technology are a fact of life that must be accommodated in the DOD acquisition process—a reality driven by the short half-life of commercial information technology, hardware supportability, software applications, and operational requirements. It is also hard to technically validate the capability delivered in IT systems—a factor that should be considered in the acquisition process to mitigate the addition of unknown vulnerabilities. In addition, many IT systems also reflect joint requirements, where resource stability and system interoperability issues remain.

**The Under Secretary of Defense for Acquisition, Technology, and Logistics should adopt a new acquisition process for information technology.**

A streamlined process for acquiring information technology would help to ameliorate many of the challenges faced in the acquisition of current systems and reflect the unique considerations described above. A key difference, from major system acquisition, is the level of technology development and system integration that is required. The major system acquisition process is required when there are substantial design trade-offs in both hardware and software and significant levels of technology development—the potential need for

advances in science or engineering must be considered when making trade-off decisions. In the information technology community, the term technology development often refers to the development of new software or integration of both hardware and software systems, and has little to do with advances in science or engineering.

Given these characteristics of information technology, the use of a new IT acquisition process is appropriate for purchasing new or replacement stand-alone IT systems and subsystems. The new process should also be used for upgrading IT systems embedded in existing weapon systems when there is little or no change in the hardware not associated with IT.



An acquisition process that accounts for the unique attributes of information technology would help to ameliorate many of the challenges faced in the acquisition of such systems today—enabling more rapid fielding of capabilities with latest-generation technology.

Key attributes of the new process are as follows:

- early and continual involvement of the user supported by system engineering design and performance value trade-offs
- multiple, rapidly executed increments/releases of capability
  - well-defined capability objectives, but not over-defined requirements for the initial increment
  - evolving capabilities for subsequent increments/releases
  - mature technologies (often with short half-life that require periodic refresh)
- early, successive prototyping to support an evolutionary approach combined with informal user trials
- early operational release of capability from within an increment
- modular, open-systems approach—designed for ease of updates
- available full funding of initial increment(s); solid funding stream for next overlapping upgrade increment(s)
- making schedule the priority for releasing available capability and not requiring (or expecting) a “yes” vote from every functional organization prior to decision milestones
- making sure that users are trained and prepared to receive the new capability

The key to success is extensive upfront analysis to determine desired capabilities and to plan for staged release of those capabilities based on future upgrades. The process incorporates the relevant changes to the major system acquisition process described previously, but tailored to the unique attributes of information technology and the level of science and engineering technology development (generally very little) required for such systems. Full funding through all phases of deployment is also an essential ingredient for success, so that preplanned

**VULNERABILITY OF INFORMATION TECHNOLOGY TO ENEMY ATTACK IS THE ACHILLES HEEL OF U.S. CONVENTIONAL FORCES—THERE IS NO “TECHNOLOGY SILVER BULLET” ON THE HORIZON. THUS, WE MUST ACQUIRE INFORMATION TECHNOLOGY IN A WAY THAT CONFOUNDS THE ENEMY AND ALLOWS THEM LESS TIME TO PREPARE.**

program releases can be accomplished. Given the continued need for information technology to improve our nation’s military capabilities—both by using commercial systems and upgrading embedded systems—widespread use of this new process is likely. It should be used when information technology is the dominate acquisition objective, not in cases where hardware development or advances in science or engineering are anticipated.

**Cyber security remains an Achilles heel that is inadequately managed in the acquisition process and actively exploited by our adversaries.** Many reports by the Defense Science Board and others have highlighted the increased vulnerability of information technology systems to various forms of attack and recommended steps to improve cyber security. (We focus in this report only on those related to acquisition.) While there is no known way to eliminate all vulnerability, DOD can take steps in the short term to minimize the potential for adversary intrusions.

**The Department should adopt an acquisition strategy for information technology that confounds the enemy—using variety, change, and rapid acquisition.**

In particular, the acquisition approach should incorporate the following features that will make information technology systems more difficult to penetrate:

- buy in variety and update often
- buy only needed functionality
- combine government and commercial off-the-shelf systems
- create a national defense cyber test bed

Although these features will add cost, the additional cost is necessary. An acquisition strategy without these features is akin to buying a tank without armor—something that would be foolish to do.

**The Under Secretary of Defense for Acquisition, Technology, and Logistics should also charter a new study to examine the possibilities for further minimizing information technology**

**THE CHAIRMAN,  
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SYSTEMS FOR  
AUTHENTICITY  
AND TO OPERATE  
WITH THEM IN  
DEGRADED MODES.**

**vulnerabilities and improving information assurance in a more comprehensive manner.**

Finally, treat information technology management as a weapon system. Given that the Department's systems are surely to be attacked and degraded, it is important that field commanders develop concepts of operation and tactics, techniques, and procedures that reflect this fact. These concepts should be practiced using exercises to test systems and data for tampering and to develop the necessary skills to operate with systems in a degraded mode.

**The Chairman, Joint Chiefs of Staff must ensure that field commanders are trained to test information technology systems for authenticity and to operate with them in degraded modes.**

***A standing rapid capability fielding organization within DOD would better enable the Department to meet urgent war fighter needs, especially during times of crisis.***

**DOD lacks the ability to rapidly field new capability to the war fighter in a systematic and effective way.**

Currently there are numerous rapid reaction programs and organizations that respond to urgent needs as defined by combatant commanders. It is estimated that these programs spend nearly \$6 billion annually. They are staffed by several hundred people, mostly located in the Office of the Secretary of the Defense; additional rapid fielding capabilities exist throughout the military services as well.

These activities tend to be ad-hoc in formation and one-of-a-kind—such as creation of the Joint Improvised Explosive Device Defeat Organization (JIJEDDO) to focus on the improvised explosive device threat—with little emphasis on training and sustainment requirements associated with fielding. Since these organizations and programs are designed to be temporary, for the purpose of meeting an urgent need, there is little effort to establish institutional memory and no process for “learning” or process improvement. The profusion of independent

**CURRENT BUDGET, REQUIREMENTS, AND ACQUISITION PROCESSES, ALONG WITH LONGSTANDING CULTURAL INFLUENCES, MAKE IT DIFFICULT TO QUICKLY RESPOND TO URGENT OPERATIONAL NEEDS ... A STANDING ACQUISITION CAPABILITY IS NEEDED TO FULFILL THESE REQUIREMENTS IN A TIMELY WAY ...**

approaches by these organizations can be confusing to contractors and most are supported by funding drawn from the wartime supplements to the DOD budget.

Within OSD, the money and people are dominated by JIEDDO, a classic example of creating a bureaucracy to avoid a bureaucracy. Initially, JIEDDO took a significant amount of time (an average of 9 to 18 months) to sort through ideas, provide development funds, and field initial concepts—with the shorter times requiring workarounds within their own system. Only recently has the output of the organization improved as they have spent significant effort on refining their internal “JCAMP” acquisition process. A more mature acquisition system managed by the Special Forces Command has operated well for several years.

With the exception of the Special Forces Command, these rapid-acquisition organizations have had problems associated with their temporary, ad-hoc nature, but the motivation for their formation has been real. Current budget requirements, longstanding cultural influences, and the overly cumbersome Joint Capabilities Integration Development System (JCIDS) acquisition requirements processes, make it difficult to quickly respond to new urgent operational needs that arise without forming yet another special office or agency. A single, standing acquisition capability, employing the best practices of a consolidation of many of the current rapid organizations, is needed to fulfill these requirements in a timely way, as there is little doubt the need will continue and likely increase.

**The Secretary of Defense should create a rapid capability fielding organization to report to the Under Secretary of Defense for Acquisition, Technology, and Logistics. This activity would field capabilities in response to urgent war fighter needs, use an organizational model like the Defense Advanced Research Projects Agency (DARPA), and establish streamlined execution processes.**

The principles of operation for such an organization should be as follows:

- It should operate with “colorless” money—allowing resources to be diverted to programs with the most urgent need as they arise.
- The organization should draw on successful attributes, including the somewhat unique culture of DARPA and the acquisition process in the Special Forces Command as organizational models, as well as build on lessons drawn from experiences in other rapid fielding efforts, such as the Mine Resistant Ambush Protected (MRAP) vehicles program.
- The focus of the organization should be on rapid fielding, not acquisition, of time-urgent capabilities. The nature of the needed capability may indeed require acquisition of new capability, but solutions that adapt existing capabilities or tactics, techniques, and procedures should also be part of the scope.
- The staff should comprise a small group of exceptional people who would provide a core capability associated with start-up and support of new initiatives, have the ability to recruit expert project teams tailored to a given initiative, and ensure the dismantlement of those teams once their job is properly completed or transitioned to a Service or other pre-designated owner.
- Consolidated into this activity would be most of the existing OSD rapid fielding initiatives whose mission is still valid, except for JIEDDO.

Expanding on the above points, each project would be approved by the Secretary of Defense. A dedicated, expert project team would then be formed to carry out the project, with a predefined sunset. Once the team completed its mission, it would then execute a transition, negotiated at the project’s inception, to a lead military service who would take on long-term sustainment responsibilities. Each team would implement a single,

time-critical, priority fielding project and have goals focused on solving a specific challenge, without a predetermined solution. The teams would be staffed with a small number of exceptional, can-do people who would call on the expertise of mainstream service organizations—acquisition, logistics, operations and maintenance, training, and others—to execute projects.

While a “DARPA” type model is preferred, we assert that DARPA is not the correct organization to do this. This concept requires a different type of staff with emphasis on fielding, training, program planning, and management rather than the very different activities required for a focus on technology development.

In addition to a very small core staff of typically 20 to 25 individuals, the permanent activity would provide a core of enabling services including recruiting and staffing assistance, office space, contract management, budgeting, accounting, and routine administrative support. Institutional memory would reside with the permanent staff, along with the responsibility of disseminating lessons learned and best practices gained through each project.

# 4 Improve acquisition execution

COMMERCIAL  
ENTERPRISE  
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DEMONSTRATES  
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RUN PRODUCT  
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NEW PRODUCTS  
BETTER, QUICKER,  
AND CHEAPER.

**Acquisition improvements are not enabled by policy and process reforms alone. Those changes lay the framework for success, but must be coupled with efficient, effective execution led by experienced leaders.**

The key improvements in management and execution lie in five areas:

- product development
- contract award and management
- acquisition workforce
- acquisition integrity
- process metrics

***Product development is an essential element of acquisition.***

Most major acquisition offices have significant difficulty managing the development of new technical capabilities desired in a new platform or system—a challenge that arises for most commercial businesses as well. Commercial entities that are successful link their portfolios of technology development objectives with demonstrations of new capabilities on operational prototypes before a technology is selected for program insertion. In addition, contingency plans are developed for preplanned “workarounds” in case the chosen technology development falls short. Often, with proper planning, the desired technology will be mature enough for insertion in a later block upgrade. This concept, often referred to as “spiral development” in DOD, ensures mature technology for each block, which will ultimately shorten time-to-field, lower risk, and lower cost. These management principles must be used by DOD.

Commercial enterprise continually demonstrates that well-run product development activities create new products better, quicker, and cheaper. DOD needs to change a number of key practices to improve product development.

**The Under Secretary of Defense for Acquisition, Technology, and Logistics needs to implement the following practices:**

- change the concept of “requirements” to “capabilities”
- manage technology development portfolios and create contingency plans for technology insertion
- maintain persistent technology development prototypes to use as technology demonstrators for sustained systems
- ensure technology readiness before planned insertion
- use competitive prototypes when possible
- use spiral development and block upgrades with stable capabilities for each block
- give program managers capabilities and performance trade-off authority

***Ultimately, the value of the delivered acquisition depends on the capability and performance of the selected contractor and effective contract management.***

Although cost and the proposed work plan are clearly critical elements of contractor selection, past performance and relevant experience of the personnel dedicated to the contract are also critical factors in predicting contractor performance. These latter two factors are often found to be missing in troubled programs.

The contract award process sometimes places insufficient weight on past performance and capabilities in contractor evaluation and offers inadequate incentives to encourage contractors to meet program performance, cost, and schedule goals. In fact, often program structures and management actions such as requirement change orders have the unintended effect of rewarding cost growth and schedule delays. The change order process is so common that it encourages and essentially ensures that contractors bid low and plan to “make money on the inevitable change orders.” Contract structures and the tendency for inadequate upfront systems engineering analysis generate opportunities for “requirements” growth and place program managers in

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CONTRACT.**

the vulnerable position of having to negotiate contract changes that generate both cost growth and delays.

**The Secretary of Defense should task the Under Secretary of Defense for Acquisition, Technology, and Logistics to issue guidance on contractor selection and management.** The contractor selection process should place heavy weight on the management and technical capability of the team dedicated to the project and past performance, as well as the proposed program bid. Competitive prototypes should be used, when feasible, as part of the selection process. Substantial incentives should be established for meeting performance, cost, and schedule goals.

*Experienced leadership needs the support of a well-trained and experienced workforce. But, the acquisition workforce in general—both civilian and military—lacks needed experience.*

The Office of the Secretary of Defense has lost much of the technical talent needed to oversee the acquisition process. Some talent has been lost due to the large decline in numbers of major programs, some due to ethics and conflict of interest practices that deny access to industry experience, and some due to an aging workforce. The military services face similar challenges. This state of affairs places demands on the acquisition training and education establishment that are well beyond current capabilities, and on the Department's ability to recruit top talent. Strengthening the acquisition workforce is an important priority.

Yet, often the notion of strengthening the workforce is confused with increasing its size. Size is not the important element. In fact, in many cases the actual head count within the acquisition organizations throughout DOD is too high—resulting in too much bureaucracy, overlap and diffusion of responsibilities, lack of accountability, and a requirement for excessive coordination. When an organization is over staffed, the effectiveness and productivity of the workforce tends to decline and managers think they need more people, when in fact they need much fewer. An oversized, inexperienced staff

**OFTEN THE NOTION OF STRENGTHENING THE WORKFORCE IS CONFUSED WITH INCREASING ITS SIZE. BUT WHEN THERE ARE TOO MANY PEOPLE “IN THE LOOP” BUREAUCRACY MASQUERADES AS MANAGEMENT.**

requires an enormous amount of coordination among people who do not know what to do or how to do it—and it can take them a long time to decide even the wrong answer. Alternatively, “a few good people” can quickly make the right decision based on experience, and move on.

Previous studies suggest that overstaffing may be several times the number needed in the acquisition workforce. They also show a significant growth in administrative functions relative to war fighting functions. The current acquisition workforce numbers more than 125,000 personnel (25,000 in the Air Force; 45,000 in the Army; 40,000 in the Navy; with the remainder in the Office of the Secretary of Defense and the agencies).<sup>2</sup> A recent Defense Science Board study showed that the percent of DOD personnel in administrative functions increased from 15 to 23 percent between 1996 and 2005, while the percent of combat soldiers remained nearly constant during the same period. This problem is exacerbated by the rotation policies of the military that tend to move officers through assignments every couple years where nearly half of the time is spent “getting up to speed.”

There is seldom a mature organization in either business or industry that would not be well advised to periodically cut its staff in order to clean out jobs that have outlived their usefulness. In general, we believe the acquisition workforce should be cut by as much as one half—understanding that this is a difficult concept to grasp. Senior executives in both government and industry are accustomed to adding resources to get the job done. But in DOD the issue is the need for more experience rather than higher numbers of people. Experienced professionals are desperately needed to manage acquisition with a broad scope of responsibility and accountability. Such a group of highly capable people, working together as a unit, can learn from each other and form a critical mass that will attract other quality people. The Department has wide flexibility and authority to hire specialists with critical skills (using the Intergovernmental Personnel Act

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2. Defense Acquisition Workforce Improvement Act (DAWIA) Count Methodology/AT&L Workforce Data Mart (FY 2008) and *Defense Acquisition Structures and Capabilities Review Report*, June 2007.

and other special hiring authorities to draw personnel from industry, other government organizations, and academia), but that authorization is underutilized.

**The Under Secretary of Defense for Acquisition, Technology, and Logistics needs to ensure staffing of more experienced civil service and military program managers and program executive officers.** This should be achieved by improved training and by hiring individuals with critical needed skills. Managers need to gain experience by managing programs of increasing complexity and scope, and rotating through a variety of program management experiences. At the same time, the overall acquisition workforce needs to be cut in size while giving more accountability and scope of work to the remaining more skilled and experienced staff. **With this “right-sized and experienced” workforce and fewer competing organizations, the Department will be creating a coherent, competent, high-quality acquisition staff—one that will attract other like individuals to government service.**

Implementing this recommendation is a win-win proposition. The Department could eliminate two to five inexperienced people for each experienced one, saving money on personnel and significantly improving acquisition. Such a program requires experienced leadership to succeed.

***As sources for critical military components and designs have become more dependent on global commercial products, the matter of acquisition integrity must gain in prominence.***

Commercial design and production trends have increasingly led to sources outside the United States. In response, the DOD acquisition system must incorporate a heightened awareness of the potential harm that can result from a failure to understand the integrity of designs and supply sources.

Many future systems or their components will be of international origin. While international sources of supply may increase vulnerabilities to tampering,

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VULNERABILITIES.**

domestic supply sources are not immune from insider tampering either. The degree to which defense-unique and commercial material in critical systems are vulnerable should be a major concern. Potential areas where systems may be compromised include: improper design elements and faulty components in integrated circuits and software used in military applications; commercial communications equipment of uncertain origin; and replacement parts for critical aircraft applications lacking the materials properties needed for stressful military use—examples which are by no means exhaustive. In the case of information technology systems, especially software and hardware/software interfaces, there is no way to ensure that the products acquired are in fact only what was desired.

However, the Department can institute practices for acquisition of both hardware and software that mitigate vulnerabilities. In certain cases a controlled DOD source may be preferable provided it can maintain a strong tie to the competitive commercial marketplace.

There is no silver bullet to ensure trusted systems. Hence, a key principle for operators in the combatant commands is awareness. In addition, operators need to test for and monitor system integrity and authenticity; and to plan, train, and exercise for operation in degraded modes.

**The Under Secretary of Defense for Acquisition, Technology, and Logistics should develop acquisition processes to: minimize system vulnerability; understand the origin of hardware and software; be willing to pay for controlled sourcing of key components; bring developmental and operational test considerations into the process early; and improve IT security by creating a system that makes it difficult to achieve sustainable penetration.**

**The Chairman, Joint Chiefs of Staff should direct all military planners and exercisers to recognize the increasing vulnerability of military systems and develop plans; tactics, techniques, and procedures;**

and concepts of operations to mitigate the loss of capabilities. Develop processes to detect when systems are degraded and operate accordingly.

*Process metrics are essential for measuring improvement and identifying areas of weakness.*

There is a well-understood management principle that you can and will only improve what you measure. Managing the acquisition process can only be effective by developing and monitoring process metrics for the reengineered acquisition processes and for the actual performance of acquisition programs. The Secretary of Defense must personally insist on continuous improvement.

The Secretary of Defense, with the Under Secretary of Defense for Acquisition, Technology, and Logistics at the lead, should develop acquisition performance metrics for monitoring the newly reengineered acquisition processes—monitoring each program against performance metrics for cost, schedule, and quality, with quarterly reporting. The metrics should be visible to all. Ensure accountability by developing management reward incentives for program managers who achieve their goals, and be prepared to discipline those who fail.

Finally, the Secretary of Defense needs to ensure that a comprehensive training program is provided to Department and contractor personnel on the entire new acquisition process and agenda. This will help all understand that he does not expect business as usual.

# Urgent action is needed

Fixing acquisition is a matter of national security. It is also a tremendous challenge that has plagued many top managers in DOD for decades. While changes to the process have been made in the past, they have met with limited success. This is in large measure because the problem was addressed only at the process level—how to buy. Equally, if not more important, is the need to address the question of what to buy and how the Department makes those decisions.

Fixing the problem calls for attention from the most senior executive in the Department—the Secretary of Defense. To step back and address the matter of what to buy, before focusing on the process of how to buy, is beyond the scope of the acquisition under secretary’s responsibilities and requires the Secretary of Defense to take the lead. It is the Secretary who must create a strategic acquisition management platform to guide the Department. And only the Secretary can ensure that it is staffed by the most experienced leaders the nation has to offer.

**CONGRESS AND THE  
DEPARTMENT MUST  
ACT AS PARTNERS  
TO “FIX” DOD  
ACQUISITION.**

## **Congress can and must be part of the solution**

**Legislation is largely not the problem, but excessive and convoluted regulation and budget instability in programs create turbulence.**

As noted earlier, the Department’s acquisition performance has given Congress ample reason to step in and “help.” Their help is needed now to implement many of the recommendations of this report. For example, to fix DOD acquisition, program funding must be predictable and Congress has to play a critical role in achieving stable program funding. This report calls for new types of funding for acquisition for information technology and for acquisition of the urgent needs that require a rapid acquisition response.

The Department will need support in approving and implementing personnel programs that will enable the Department to hire the right leaders with proven experience. Furthermore, many government requirements (such as the Berry Amendment, Naval Vessel Rules, International Traffic in Arms Regulations, and others)

directly contradict today's commercial design and manufacturing trends. The current rules significantly harm national security options by limiting DOD access to commercial and global technologies and allies' markets. Thus, Congress and the Department must act as partners to "fix" DOD acquisition.

### **In summary, the key elements of a strategic acquisition platform are as follows:**

1. **Buy the right things**, guided by national security objectives.
2. **Select an effective leadership team**—in the Office of the Secretary of Defense, the military departments, and defense agencies—with proven, relevant experience. Ensure alignment among senior leadership to DOD goals and timely support of major acquisition decisions.
3. **Reform acquisition with efficient processes** for major systems, information technology systems, and to rapidly field critical war fighting needs, especially in times of crisis.
4. **Improve acquisition execution**—management of product development, contract award and management with credible contractor teams and contracts, right sizing and training the acquisition workforce, acquisition integrity, and acquisition performance metrics.
5. **Enlist Congress as part of the solution** to provide the legislative support needed to succeed.

Even if all the recommendations put forth in this report are implemented, it is recognized that unanticipated problems may arise during the course of any acquisition or product development managed by experienced and well-intentioned people. The only way to minimize the unintended and potentially disastrous consequences of such problems is to quickly recognize and deal with them. If the culture is to use problems as a stick to punish people, then issues will not likely be brought to the forefront in a timely manner and the problems that follow will escalate. DOD acquisition programs are executed on an open stage—creating a difficult job for the best leaders. It is critical that all stakeholders align to deliver our best national security potential.

As threats will surely persist and budgets decline, it will be increasingly important for the Department to streamline its acquisition processes in order to sustain the superior war fighting capability on which the nation depends.

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