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Defense

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An Innovation Insurgency

Hacking for Defense
at the DAU

Mirror, Mirror
Too Many Delays?
Don't Look to FAR

Using Industry Best
Practices to Improve
Acquisition

GAO Rulings on
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in Fiscal 2017

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An **Innovation** Insurgency

Hacking for Defense at the DAU

David L. Gallop, Ph.D.

A Call for Innovation

Our ability to predict the future is muddled by complexity and volatility. The defense acquisition “business thinking” processes are much less appropriate than they were just a decade ago. The techniques taught at Stanford University and more than 50 other colleges and universities, called Hacking for Defense (H4D), show great promise in delivering products and services rapidly while meeting warfighter needs in a repeatable, sustainable manner.

In the Defense Acquisition University (DAU) H4D pilot, students used agile and iterative development methods to solve a real world, complex problem for a high-profile sponsor in 24 days. The methods and terminology discussed in this article will be new to most readers. Some key terms and definitions used in this article are shown in Table 1.

Gallop is a professor at the Defense Acquisition University's Defense Systems Management College where he is the acting director of the Leadership Learning Center of Excellence and a lead instructor in the executive programs. He served in various tactical and acquisition positions in his 21-year Army career and has a Ph.D. and Master of Science (MS) degree in Systems Engineering from the George Washington University. He also has a MS degree in National Resource Strategy from the National Defense University and an MBA degree in Government Contract Management from the Florida Institute of Technology.



The H4D Story

In 2010, the commander of the U.S. Army Rapid Equipping Force (REF), Col. Pete Newell, observed the agility and innovation practiced by the Taliban. The Taliban had tight cycles of learning, tested their ideas quickly, and used their social networks to deploy inelegant, yet effective, solutions with devastating impact. In short, the Taliban looked and acted like a start-up. The best way to fight a start-up is with another start-up.

Newell reshaped the REF into a team of teams designed to attack and solve problems using start-up techniques. By 2013, the REF's approach resulted in \$1.4 billion of new warfighting capability flowing into Afghanistan. In 2015, after retiring, Newell combined efforts with retired Col. Joe Felter and Steve Blank—the creator of the Lean Startup movement—to introduce Stanford graduate students to the problem-curation techniques that Newell developed at REF and to Blank's Lean LaunchPad entrepreneurship curriculum. The in-

troductory occurred as the students worked to solve critical problems facing the Department of Defense. Newell, Felter and Blank called their program "Hacking for Defense," or H4D. Former Secretary of Defense William Perry was so impressed with the results that he encouraged Stanford to make H4D a permanent part of the university's curriculum. Within 2 short years, H4D has expanded nationwide and is solving State Department and Intelligence Community problems. That brings us to H4D at the DAU.

DAU Curricular Application

In August 2017, the Section 809 Panel, a congressionally directed body investigating defense acquisition reform, asked DAU to investigate the utility of the Hacking for Defense methodology to improve acquisition outcomes. In September 2017, the author attended the H4D Educator and Sponsors 3-day certification training. The training included an introduction to the Lean LaunchPad techniques and a review of the H4D curriculum. I

Table 1. Terms and Definitions

Term	Definition
Flipped Learning	"Reverses the traditional educational arrangement by delivering instructional content, often online, outside of the classroom."
Hacking for Defense (H4D)	An academic program that enables students to solve real defense and intelligence problems using the Lean LaunchPad techniques.
Hacking for Defense Incorporated (H4Di)	"A non-profit platform that sources, translates, and coordinates problem statements for use in H4D networked universities and sponsors."
Lean LaunchPad	"A set of techniques for start-up success based on Steve Blank's book <i>The Four Steps to the Epiphany: Successful Strategies for Products That Win</i> that encourage rapid discovery."
MD5	"A Department of Defense (DoD) entity under Manufacturing and Industrial Base Policy, and a network of national research universities that seeks to reinvigorate civil-military technology collaboration."
Minimum Viable Product (MVP)	A minimum set of features that is enough to deploy the product and test key assumptions about customers' interactions with the product.
Mission Model Canvas (MMC)	An adaptation of Alexander Osterwalder's Business Model Canvas which provides a framework for verifying the assumptions necessary for a successful venture. The MMC modifies the Business Model Canvas for application to defense and intelligence community problems.
PMT 401 Program Manager's Course	PMT 401 is a Defense Acquisition University executive course for program managers. The 10-week course focuses on developing critical thinking skills through case-based learning.
Reverse Seminar	An educational arrangement in which the students present to the instructors.
Section 809 Panel	"The 18-person panel, created in Section 809 of the Fiscal Year (FY) 2016 National Defense Authorization Act (NDAA) and amended by Section 863(d) of the NDAA for FY 2017, is tasked with finding ways to streamline and improve the defense acquisition process."
Vision Box	"Vision Box exercise is a powerful way to help define the vision of the ultimate product, motivate the project team, and generate enthusiasm among stakeholders."

Source: The author.

was convinced that the only way to assess the utility of the methodology would be to run a student pilot.

The DAU leadership embraced the idea of a very limited student pilot. A call for six volunteers went out to the Program Manager's Course (PMT-401 in the *DAU Course Catalog*) to spend the last 5 weeks of their 10-week course experiencing the H4D curriculum. Within 10 days of the decision to launch the pilot, the course was under way. The student team received their problem statement from their problem sponsor, the Section 809 Panel.

The Hacking for Defense Initiative (H4Di) organization (www.hdi.org) works with problem sponsors to "curate" problems. This is a process to develop, scope and bound problems so that they are reasonable starting points for the H4D student teams to solve as if the student teams were start-ups.

Why a Start-Up?

According to entrepreneur Steve Blank, a start-up is a temporary organization in search of a business model. This premise fits nicely into an academic setting. A student team is temporary, lasting no longer than a grading period. The students

are also searching. They are looking for answers outside the walls of a classroom. Student teams—like start-ups—also are lean. They have very limited resources and must move quickly to solve a problem before their resources run out. Success for the student teams and for start-ups consists of acquiring the ability to solve a customer problem in a framework that is desirable, feasible and viable. That framework is the start-up's business model.

The DAU student team would have less than 5 weeks to present their solution and supporting "mission" model to the real-world problem using the Lean LaunchPad techniques.

Lean LaunchPad is based on the premise that there are "no facts inside the building" so one must venture into the world to discover the true problem and the full solution space. The methodology starts with defining hypotheses (guesses), then testing the problem and solutions to confirm the hypotheses or pivot in the problem or solution. Students test hypotheses through many techniques but most importantly through interviewing beneficiaries (i.e., customers). Students use minimum viable products (MVPs) to test their hypotheses with beneficiaries. An MVP is a quick and cheap representation of a single

Lean LaunchPad is based on the premise that there are “no facts inside the building” so one must venture into the world to discover the true problem and the full solution space.

or limited set of problem or solution features. MVPs can take many forms such as a flowchart, a landing page mock-up, or a physical model. The key attributes of an MVP are that it is focused, quick and cheap.

Using their MVPs as conversation “sparkers,” students interview more than 100 beneficiaries. Why so many? Typically that many interviews are needed for distinct patterns to emerge. From these patterns, students gain insight into the true nature of the problem and the depth and breadth of the solution space. At Stanford, students have an academic quarter (10 weeks) to complete the 100-plus interviews and their MVPs to deliver a solution to the problem sponsor.

Students capture their results in a framework called the Mission Model Canvas (MMC). For the DAU H4D pilot, the student team would have half the time to achieve 10 weeks’ worth of learning.

DAU Student Pilot Versus Stanford

The PMT 401 faculty team recruited potential candidates to participate in the H4D pilot while PMT 401 was in their fourth week of the 10-week program. The author presented the candidates with an overview of H4D and their tentative schedule and assignments for the 5 weeks of the pilot. The students in

the H4D pilot would achieve the same learning objectives as their classmates, but in a new way. Six of the eight candidates agreed to take on the H4D pilot in lieu of the standard PMT-401 curriculum.

The H4D curriculum as taught at Stanford and other universities contains flipped learning and reverse seminars. In the flipped learning, the students are given readings, videos and team assignments that they complete outside of the classroom. When they come to class, the students present their work. At the conclusion of the student presentations, the faculty presents an Advanced Lecture that introduces the learning theme and assignments for the coming week. The Stanford

Table 2. Business Model Canvas (BMC) Transformed into the Mission Model Canvas (MMC) for National Security Problems

Key Partners	Key Activities	Value Proposition	Customer Relationships Buy-in & Support	Customer Segments Beneficiaries
The entities with whom the team must partner to optimize the mission model, reduce risk or acquire resources	The most important activities the team must perform to make the mission model work	The bundle of products and services that create value for a specific beneficiary	The actions necessary to get the buy-in from each of the beneficiaries	By title or function, the individuals for whom you are trying to create value
	Key Resources		Channels Deployment	
	The financial physical, intellectual and human resources required to create, distribute and maintain the value proposition		What it will take to get the value proposition into wide-spread use	
Case Structure Mission Budget (or Cost)		Revenue Streams Mission Accomplishment		
The costs to deliver the value proposition		The measures for each beneficiary that would indicate that the promise of the value proposition has been met		

Source: Adapted by author from strategyzer.com and h4di.org.

10-week H4D curriculum is punctuated with several Reverse Seminars. In these seminars, the student teams present their progress toward solving the sponsor's problem to the faculty. The students are on the podium; the faculty are in the student seats, hence the term "reverse seminar."

For the DAU H4D pilot, the instructors compressed the exercises and Advanced Lectures into the first 2 weeks. However, each week concluded with a reverse seminar to ensure that the student team progressed appropriately in learning and experience.

DAU H4D Pilot Learning and Outcomes

The DAU H4D learning activities began when the student team received the problem statement from their problem sponsor, the Section 809 Panel. The Section 809 Panel, created in Section 809 of the Fiscal Year (FY) 2016 National Defense Authorization Act (NDAA) and amended by Section 863(d) of the NDAA for FY 2017, is tasked with finding ways to streamline and improve the defense acquisition process. The Section 809 Panel submitted a problem to H4Di in September 2017. Representatives at H4Di worked with the problem sponsor to refine the problem before the DAU H4D students received the problem. The problem statement the DAU H4D students received in October 2017 was the following: "Develop a way for program managers to measure and standardize a culture that is conducive to success."

The team members wrestled with the problem statement and decided that they needed to tighten the problem if they had any chance of delivering a real solution in 5 weeks. The team dialogued with the representative of the Section 809 Panel to refine the problem to be: "Identify a method for program managers to visualize their program office culture." This allowed the team to identify a specific set of beneficiaries for their initial Mission Model Canvas (MMC) framework.

The MMC is a variation of Alexander Osterwalder's Business Model Canvas (BMC). The BMC is widely used framework to transform ideas into desirable, feasible and viable business models. You can see the BMC evolution of some well-known companies at the Strategyzer.com link: (<https://www.youtube.com/channel/UCPVreN9tVxFY2RgWeENShpg>).

As in the case of the BMC, there are nine blocks in the MMC. Table 2 illustrates how H4Di modified the BMC to create the MMC. On Day One, the students completed the entire MMC, populating the canvas with their guesses (hypotheses). Their mission for the remainder of the 5 weeks was to test their hypotheses by interviewing beneficiaries, partners, etc. Through this discovery, the team continually transformed



The H4D student team created a mock-up of a "vision box" to sell the solution to attendees at a DAU gathering, who provided valuable feedback to help refine the solution.

their MMC until they verified a solution that was desirable, feasible and viable.

The team developed four MVPs. MVPs are conversation "sparkers" to facilitate the team's learning and beneficiary discovery. The MVPs were critical tools in the team's strategy to test both their understanding of the problem and the potential solution space. Key to the Lean LaunchPad and H4D approach is the expectation that the initial understanding of the problem and solution are wrong. The only way to get both right is to conduct simple, quick, inexpensive tests of an MVP with people that matter.

Within the learning and beneficiary discovery process, this author instructed the team to perform three tests. The first test involved using a vision box. A vision box is a figurative representation of a solution. In this test, the student team decorated a box that represented their initial solution idea. The vision box included the name and image of the solution as well as key selling points and features. Once the team completed the vision box, their next task was to "test sell" their solution.

During a DAU social barbecue, each student had to "sell" their solution for visualizing culture in a program office to at least two people at the social. Their goal was to get people

to say “yes” or, even better, “yes if” to the solution. With a “yes if,” the team would gain insight into what was wrong with their initial solution. Test selling with the vision box proved to be wildly successful for the team based on the rich feedback they received.

As the team refined their solution, they hypothesized that the workforce would need to provide daily inputs into a software application. The team conducted a “landing page test.” In this test, the students waited for DAU employees to arrive at their desks for the workday. The team asked the subject employees to give their reaction to a PowerPoint representation of the data entry page. They also asked the employees about the concept of providing the requested data when they first logged in for the day. The team received interesting feedback on the substance of the data entry page and the concept. The feedback made the team reconsider major aspects of their solution.

Eventually the team reached a high degree of confidence that it was on the right track for its cultural visualization tool. The team challenged their solution by performing an A/B test. In the A/B test, the team tested their proposed solution against a different solution. Since the team’s preferred solution (Solution-A) was technical, software and data driven, the team proposed a solution that was the exact opposite (Solution-B), a cultural consultant. They tested the two side-by-side with beneficiaries and received feedback. Their A/B test verified key elements of what they understood the problem to be and verified that they adequately explored the solution space.

In just 24 days, the team had interviewed 105 beneficiaries, developed four MVPs and run three formal tests. They presented their solution to visualizing culture in a program office to the problem sponsor, the Section 809 Panel, on Nov. 9, 2017. The problem sponsor agreed that the solution was desirable, feasible and viable. In short, the student start-up had found its mission model.

Typically, promising solutions that come out of the H4D process at Stanford move onto a venture capital incubation phase. For the DAU H4D student pilot solution, DAU will perform the incubation role and has teamed with a technology vendor and several program offices to test the cultural visualization tool in the real world. The DAU H4D pilot demonstrated the power of the Lean LaunchPad techniques and the incredible potential that resides in the DAU student body. The innovation insurgency is just starting.

Epilogue

Two of the six students in the H4D student pilot continue to support testing the team’s solution in several program offices. Another two students are volunteering their time to mentor Georgetown University students in that university’s second H4D cohort.



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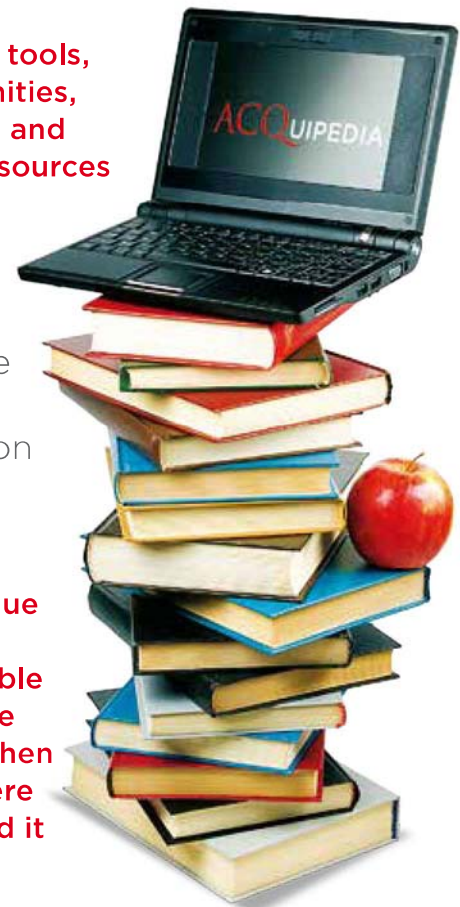
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Mirror, Mirror

Too Many Delays? Don't Look to FAR

John Krieger

If you think the defense acquisition process takes too long or doesn't allow you to do what you want, don't look in the FAR—look in the mirror.

The Secretary of Defense's July 1989 Defense Management Report to the President concluded that much of the stifling burden of Department of Defense (DoD) regulatory guidance, including the Defense Federal Acquisition Regulation Supplement (DFARS), was self-imposed.
—The Federal Register, July 31, 1991

That statement comes from long, long ago, from a time some might consider the halcyon days of acquisition, not the grim times in which we now toil.

Hardly a week goes by without an article being published, or someone in a high position complaining, about the burdensome acquisition process. They talk about the need for acquisition reform. They point to the Federal Acquisition Regulation (FAR) and complain that it needs to be significantly shortened or modified to improve and speed

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the process. But, from my point of view, the problem is not the FAR but the people who are complaining about the FAR.

Although the words “day” and “days” appear 246 and 789 times, respectively, in the FAR, there is no set time, no set length (i.e., Procurement Administrative Lead Time [PALT]) for an acquisition. Many of the days mentioned are for procedural issues or are designed to limit how long certain actions may take. And, of course, many of the time requirements can be waived. Ultimately, the time that it takes to accomplish an acquisition is not dictated by the FAR, but by the people doing the work and the schedules they set. Admittedly, the way the Department of Defense (DoD) has chosen to supplement and implement the FAR in the Defense FAR Supplement (DFARS) and the DFARS Procedures, Guidance, and Information (DFARS PGI) compounds the time required to accomplish a DoD acquisition.

If you think the defense acquisition process takes too long or doesn't allow you to do what you want, don't look in the FAR, look in the mirror.

The FAR, the DFARS and Other Supplements

Let's look at problematic policies first. The Section 809 Panel, the panel tasked by Congress to “review the acquisition regulations applicable to the Department of Defense with a view toward streamlining and improving the efficiency and effectiveness of the defense acquisition process and maintaining defense technology advantage,” touts as a success that the Fiscal Year 2018 National Defense Authorization Act eliminated the requirement for vending machines on DoD property to accept \$1 coins (i.e., Sec. 885. Exception for business operations from requirement to accept and dispense \$1 coins). [Note: The requirement still exists for all other Executive Agency contracts.] Ask yourself this: “How much delay was caused by including that clause in a major system acquisition?” Certainly not a month, a week, a day, an hour, nor even a minute. Given automatic contract writing systems, a nanosecond?

Consider a more problematic example, the requirement for acquisition planning at FAR Subpart 7.1. The FAR establishes requirements for acquisition planning to implement a statutory requirement. At certain dollar thresholds, established by the agency head, the plans are required to contain certain information and to be reduced to writing. The approval authority for other than firm fixed-price contracts is required to be at least one level above the contracting officer. The DoD, military department, and defense agency supplements to the FAR significantly increase the minimum FAR requirements.

The DoD makes things even worse for major system acquisitions. Consider the fact that, for a major system, FAR Part 7 requires a written acquisition plan. However an “acquisition strategy” also is required by the Office of Management and Budget Circulars A-11 Preparation, Submission and Execution of the Budget and A-109 Major System Acquisition and the FAR (i.e., FAR 34.004). The good news is the FAR states that, “The strategy shall be in writing and prepared in accordance with the requirements of Subpart 7.1, except where inconsistent with this part, and shall qualify as the acquisition plan for the major system acquisition, as required by that subpart.” To mix a metaphor, you can kill two birds with one document. The bad news is that this is not so in the DoD, where two separate documents are required, with two different sets of review and approval requirements.

If you think the defense acquisition process takes too long, don't look in the FAR, look in the mirror.

Source Selection

One thing most complained about by program managers, contracting officers and others is how long it takes to do source selection. Interestingly, the FAR has very few requirements in terms of how long a source selection should take. We do have some specified “days” that could drive schedule. For instance, the notice of proposed contract action discussed at FAR 5.203 requires 15 days, unless the contracting officer establishes a shorter period for issuance of the solicitation or uses the combined synopsis and solicitation procedures. But, the FAR allows the contracting officer two alternative means to reduce that timeline. Smart program managers and contracting officers will integrate that time in their schedules to run parallel with other events. Except for acquisition of commercial items, agencies give offerors at least a 30-day response time for receipt of bids or proposals, if the contract action is expected to exceed the simplified acquisition threshold. The total of those two requirements is 45 days, but, as discussed, can be even shorter, particularly if people are doing their jobs, and giving preference to acquisition of commercial items, as required by statute.

The FAR has no time limits relating to source selection, itself. The only two instances of “day” in relation to source selection deal with what constitutes a late proposal, one the government doesn't have to evaluate. So, how long does it actually take? Let me give a personal example. On one major system acquisition I did as a contracting officer (i.e., Medium Launch Vehicle, Phase I, for award of multiple contracts for design reviews), we allowed the full 30 days for proposal preparation. From receipt of proposals to award of four contracts was a total of 8 days. Those 8 days included receipt of proposals, establishment of a competitive range, discussions with all offers, receipt and evaluation of final proposal revisions, source selection decision, public announcement, and contract award. The biggest single chunk of which was the DD-LA-(AR) 1279 report for congressional and public announcement of the award. After all, the Air Force FAR Supplement requirement was, and still is, “. . . by close of business three workdays before the date of

the proposed contract award.” That can be as much as 6 or 7 days, if you have a weekend or holiday weekend involved.

I have seen similar acquisitions for multiple awards of development contracts take more than a year to accomplish. What is the difference between 8 days and a year, other than the obvious difference in length? The difference is in terms of how many evaluation factors and subfactors are used and how much information is requested. The greater the number of evaluation factors used, the more cumbersome the evaluation. As more information is requested, more reading needs to be done. Ask how much information is needed to be able to determine whether somebody will be able to develop a particular product? In the 8-day case, not much. In the more-than-a-year case? Well, in many cases, the proposals look like they are the first Contract Data Requirements List deliverable on a contract rather than proposal information needed to select an offer and offeror.

(Full disclosure: The Phase I award actually was a week behind schedule because the Under Secretary of the Air Force wanted to personally approve our announcement in *Commerce Business Daily*—now the *Federal Business Opportunities* publication. On the other hand, Phase II was awarded 2 months ahead of schedule, because we used the design review packages from Phase I for proposals and the design reviews as discussions. The Secretary of the Air Force wanted to award the contract even sooner, but the award was held up by, you guessed it, the DD-LA-(AR) 1279 report to Congress.)

If you think the defense acquisition process takes too long, don’t look in the FAR, look in the mirror.

I have heard program managers and contracting officers complain that the competitive source selection process doesn’t allow for adequate discussion of the successful offeror’s proposal, that there may not have been a complete “meeting of the minds.” I suggest that if they want better discussions, they should conduct a source selection by an evaluation of technical proposals, limit discussions to those that are truly necessary, request cost proposals, establish a competitive range, again limit discussions, get final proposal revisions, and select an apparent successful offeror with which to hold more extensive discussions and negotiations. I am routinely told that you can’t do that. This process—

involving four-step source selection procedures—was part of DFARS (i.e., 215.613-70) until Oct. 14, 1998, when it was removed because, according to the *Federal Register* notice, “Guidance on the four-step source selection process and the alternate source selection process have been removed, as the new guidance at FAR 15.101, Best value continuum, clearly allows such source selection processes.”

If you think the defense acquisition process doesn’t allow you to do what you want, don’t look in the FAR, look in the mirror.

Crossing Fiscal Years

Defense officials routinely complain about the inability to contract (e.g., award contracts, exercise options, start new programs) at the crossing of the fiscal year because of continuing resolutions and the lack of an approved defense appropriation.

Seriously? The Congressional Budget and Impoundment Control Act of 1974 changed the start of the federal government’s fiscal year to Oct. 1. Since implementation of the revised date in 1976, Congress has managed to have all the individual appropriation bills passed timely on only three occasions.

(For the math impaired, that’s three times in 41 years, roughly a 7 percent success rate.) Even back in the 1980s, when I was doing my hands-on contracting, we knew to schedule contract awards and option exercises no earlier than January or February and no later than August. The intervening 30 years have provided no reason to change that thinking.

People should accept the fact that Congress is not going to improve its process and start making appropriations on time. The FAR allows both severable and non-severable contracts to cross fiscal years; the former by the nature of non-severable services, the latter by statutory authority implemented in FAR 32.703-3 Contracts crossing fiscal years:

(b) The head of an executive agency, except NASA, may enter into a contract, exercise an option, or place an order under a contract for severable services for a period that begins in one fiscal year and ends in the next fiscal year if the period of the contract awarded, option exercised, or order placed does not exceed one year (10 U.S.C. 2410a and 41 U.S.C. 3902). Funds made available for a fiscal year may be obligated for the total amount of an action entered into under this authority.



**Smart program
managers and
contracting officers will
integrate that time in
their schedules to run
parallel with other
events.**

There is nothing in the FAR to prevent a program manager or contracting officer from establishing a schedule that is in no way tied to beginning of a fiscal year.

If you have problems with crossing fiscal years, don't look in the FAR, look in the mirror.

Obtaining a D-X Rating

On the Medium Launch Vehicle program the program manager and I (i.e., the contracting officer) wanted a D-X from the Defense Priorities and Allocations System (DPAS). It had taken my previous launch vehicle program (i.e., Complementary Expendable Launch Vehicle (CELV)/Titan IV), almost a year to obtain such a rating from the Secretary of Defense. We needed it much faster to support the Space Launch Recovery Program after the *Challenger* disaster. Luckily FAR 11.601 definitions provided the answer, "'Rated order' means a prime contract, a subcontract, or a purchase order in support of an approved program issued in accordance with the provisions of the DPAS regulation (15 CFR [Code of Federal Regulations] part 700)." We found, and documented in a Memorandum for the Record, that our "order" would support the Trident Submarine, a D-X rated program, and its missile test program by launching GPS satellites.

If you think the defense acquisition process takes too long, don't look in the FAR, look in the mirror.

Structuring Contract Line Items

On the Defense Satellite Communications System (DSCS) III program, the contractor's corporate selection of an accounting system did not allow for the booking of profit until units had been delivered to the customer. Although the corporation got benefits in other business units, it takes a long time for spacecraft to be delivered. We negotiated a subcontract line item structure that allowed for Department of Defense Form 250 acceptance of spacecraft subsystems for billing purposes, with a special contractual requirement in Section H of the contract that required the spacecraft to operate successfully as a system to keep the profit and not incur a hefty negative incentive. In seeking final approval of the contract, we were told the approach did not meet the requirement to accept militarily usable end items. We pointed out that the requirement of DoD 7000.14-R, Department of Defense Financial Management Regulation, was a funding issue, not an acceptance issue, and that there was no such requirement in the FAR. We also pointed out that according to our Price Negotiation Memorandum we had negotiated a multi-million-dollar savings in exchange for the SubCLIN structure.

If you think the defense acquisition process doesn't allow you to do what you want, don't look in the FAR, look in the mirror.

Mirror, Mirror

Acquisition is not a grim (or Grimm) world. Program managers can use the FAR as a way to get things done, or as an excuse for not getting them done. For the answer to which of those is

the proper interpretation, you need look no further than FAR 1.102 Statement of guiding principles for the Federal Acquisition System, particularly 1.102-4 Role of the Acquisition Team:

(e) The FAR outlines procurement policies and procedures that are used by members of the Acquisition Team. If a policy or procedure, or a particular strategy or practice, is in the best interest of the Government and is not specifically addressed in the FAR, nor prohibited by law (statute or case law), Executive order or other regulation, Government members of the Team should not assume it is prohibited. Rather, absence of direction should be interpreted as permitting the Team to innovate and use sound business judgment that is otherwise consistent with law and within the limits of their authority. Contracting officers should take the lead in encouraging business process innovations and ensuring that business decisions are sound. 

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MDAP/MAIS

Program Manager Changes

With the assistance of the Office of the Secretary of Defense, *Defense AT&L* magazine publishes the names of incoming and outgoing program managers for major defense acquisition programs (MDAPs) and major automated information system (MAIS) programs. This announcement lists recent such changes of leadership for both civilian and military program managers.

Air Force

Col Robert P. Bongiovi relieved **Ms. Claire E. Leon** as program manager for the Evolved Expendable Launch Vehicle Program on Dec. 12, 2017.

Col Michael W. Jiru relieved **Col William S. Leister** as program manager for the MQ-9 Unmanned Aircraft System Reaper Program on Jan. 1, 2018.

Col Kevin B. Massie relieved **Col Stephen G. Purdy** as program manager for the Enterprise Space Battle Management Command and Control Program on Jan. 1, 2018.



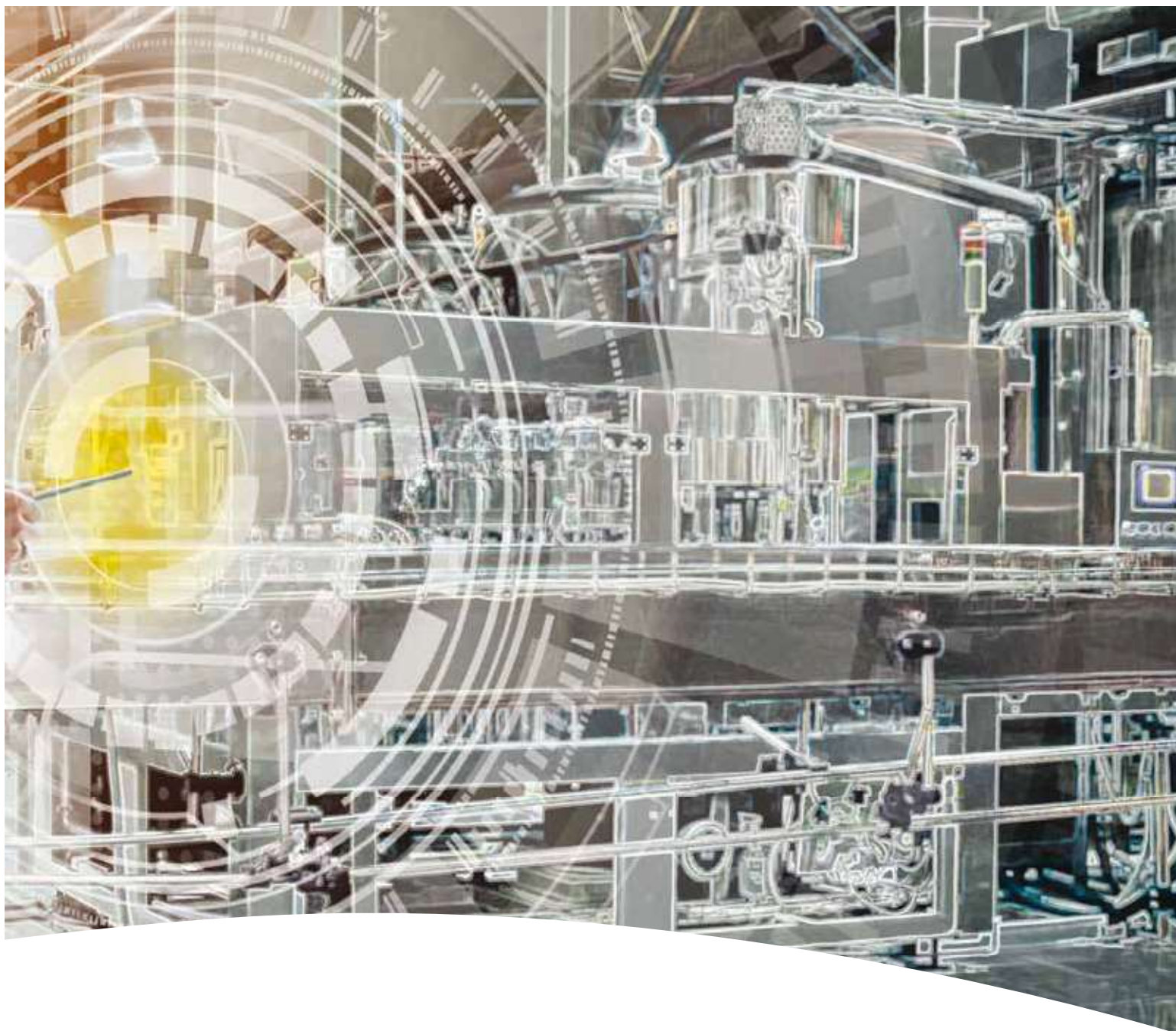
Using **Industry Best Practices** to Improve Acquisition

Craig M. Arndt, D. Eng., P.E.

Development and acquisition of the very best weapons and systems constitute the priority mission of the Department of Defense (DoD).

Everyone in the acquisition business continues to ask how we develop and acquire the best weapons and systems for our men and women in uniform. In the May 2017 testimony before the House Armed Services Committee, the chairman of the Section 809 Acquisition Advisory Panel, Deidre Lee, said that the acquisition system is deficient as ever and is becoming a threat to national security. Those were strong words but not too different from what we have heard many times from the Government Accountability Office (GAO), Congress and others in and around our business.

Arndt is a professor and past chairman of the Engineering and Technology Department at the Defense Acquisition University, Fort Belvoir, Virginia. Arndt also has extensive experience as a senior executive and technology leader in the research, engineering and defense industries. As a senior scientist at the Air Force Labs and the Air Force Institute of Technology, he developed advanced smart bomb technology and advanced flight-control systems. He holds five university degrees, including a Doctorate of Engineering in Electrical Engineering from the University of Dayton, a Master of Arts in National Security and Strategic Studies from the U.S. Naval War College in Rhode Island, a Master of Science in Human Factors Engineering and a Master of Science in Systems Engineering from Ohio's Wright State University and a Bachelor of Science in Electrical Engineering from Ohio State University. He is a licensed Professional Engineer.



As a result, there are many calls for updates and changes in the DoD's acquisition systems and processes. One of the biggest government acquisition trends over the last 20 years is the tendency to look at and, in some cases, emulate "industry best practices."

Defining Industry Best Practices

A best practice is one that has been generally accepted for producing results that are superior to those achieved by other means or because it has become a standard way of doing things—e.g., of complying with legal or ethical requirements. Best practices are used to maintain quality as an alternative to mandatory legislated standards and can be based on self-assessment or benchmarking. Specific industries have different practices that reduce risk and generally improve outcomes.

Trends and Constraints

No one ever told us that this would be easy. So let's look at some (by no means all) of the reasons why defense acquisition is hard. First, we are trying to develop the best systems to give our warfighters overwhelming superiority in every fight. Developing the most cutting-edge systems is inherently harder than any other kind of development. And technology continuously and rapidly changes. This is particularly challenging for organizations like DoD.

In the first place, we keep many of our systems such as planes and ships for a long time (sometimes up to 50 years). During this extended period, technologies can change many times as can threats and enemies that the nation faces. Secondly, changes of technology

can and will change the methods of developing and operating our systems. Rapid change drives development forward ever faster. Therefore, one best practice is to let the pace of technological change drive our DoD development time lines. In other words, the DoD's development time lines should be limited by the pace of technology development, not the time needed to work the acquisition processes. The time needed to conduct acquisition processes should be constrained by the time available (if worked in parallel) to develop, test and field the technology—and not by time needed to fulfill the paperwork requirements.

Stewards of the Taxpayers' Money: The federal government, by definition, spends the taxpayers' money. We need to set up methods and procedures to ensure that we are spending the money effectively and in a way that maximizes the utility of the end product to the mission: defense of the nation.

And since DoD is part of the federal government, we must maintain a policy of "fairness to all." We need to be fair to the people that the government does business with, and fair to the operational units receiving the systems we acquire, and make sure we provide them with the best capabilities we can obtain using the resources that we have been given.

A Great Deal of Oversight: The Defense Acquisition System by the nature of its organization and founding and operational laws, regulations and guidance has a great many people and organizations with some degree of oversight to exercise. DoD is very large and very structured. As a result, both the military Services and the Office of the Secretary of Defense provide internal oversight to the acquisition process. In addition to internal oversight, acquisition programs get oversight from Congress, the press and a number of different audit organizations.

All this oversight tends to lengthen the acquisition processes and reduce risk that can reasonably be expected. It is a well understood organizational principle that negative accountability can create inaction.

A Lot of Process and Procedure: The many people inside and outside of the Defense Acquisition System have contributed to one of the world's most complex organizational processes. All of the regulations (the Federal Acquisition Regulation [FAR], the Defense Federal Acquisition Regulation Supplement and others) and processes and procedures were created for good reasons.

As a part of the Better Buying Power initiative of former Under Secretary of Defense for Acquisition, Technology, and Logistics Frank Kendall, an effort was made within DoD to reduce unnecessary processes. Despite many attempts at such reductions over the years, the DoD and the federal government as a whole have developed more processes and procedures than ever for the acquisition and development of systems—and more than is known of any other organization in the world.

On the positive side, a number of very innovative and aggressive processes have been developed by the DoD and other government organizations to reduce time and improve the acquisition efficiency. Two the most promising were Alpha contracting and Other Transaction Authorities (OTAs). In Alpha contracting, all parties agree to meet at one time with the authority to make final decisions and work out contracting. OTAs are a method of contracting for government work without using FAR.

Conflicting Interests: Government contracting and even more so the development of weapons and systems for the DoD inherently have a great many stakeholders. These stakeholders can include the end users (soldiers, sailors, airmen and Marines), the Services (U.S. Army, Navy, Air Force, etc.), the manufacturers and other vendors, Congress, the American people (the voters), as well as U.S. allies and other overseas interests—just to name the biggest ones. People and organizations inherently have different and competing interests in how, when and where the DoD's systems are developed and in the cost schedule and performance of these systems. The current system is designed to take the interests of these different stakeholders into consideration during program development—however, it does nothing to align these different and competing interests. Lack of alignment, as George Labovitz and Victor Rosansky note in their bestselling management book, *The Power of Alignment*, can destroy any organization's ability to meet its mission.

In industry, alignment is achieved by reducing and/or eliminating the incentives to the misalignment. This is effective in industry only because (and when) the leadership has the authority to change the different stakeholders' incentives. In the government and particularly in DoD, the program leadership (the program manager or PM), lacks the authority to change the incentives of the many stakeholders and may not have insight into many of the stakeholders' decision-making processes and many of the actions that affect their programs. As a result, it is nearly impossible for PMs to correctly align the efforts and action that affect the successes of their programs.

Best Practice: The effective and efficient development of complex systems requires limiting the number of conflicting stakeholders to those with direct impact from the system (operators, maintainers, and resource sponsors). The program leadership needs to continuously work to discover and minimize the impact of conflicting interests of program stakeholders.

DoD's Need for Speed

The March 2011 GAO-11-273 report, *Warfighter Support—DOD's Urgent Needs Processes Need a More Comprehensive Approach and Evaluation for Potential Consolidation*, stated: "Over the past two decades, the fulfillment of urgent needs has evolved as a set of complex processes ... to rapidly develop, equip, and field solutions and critical capabilities to the warfighter." (On page 2 of the report, we find the following:

"DOD's 2010 *Quadrennial Defense Review* cited that the department's institutions and processes needed reforms to better support the urgent needs of the warfighter; buy weapons that are usable, affordable, and truly needed; and ensure that taxpayer dollars are spent wisely and responsibly."

GAO noted that a 2009 Defense Science Board stated that DoD "identified more than 20 organizations, processes, and funds with the purpose to address warfighter needs rapidly. The GAO report stated that GAO had "identified at least 31 entities that manage urgent needs and expedite the development of solutions to address them."

The GAO-11-273 report identified which organizations were involved with transition, transfer, or termination, defined as: "The decision regarding the final disposition of the capability in terms of whether it will be (1) transitioned to a program of record if it addresses an enduring capability need, (2) transferred to an interim sponsor for temporary funding if it addresses

Army Memorandum initiated the Nonstandard Equipment (NSE) Army Requirements Oversight Council (AROC) process. The NSE AROC disposition decision called for an AROC Memorandum (AROCM) that "captures decisions made, assigns taskings and responsibilities, establishes a source for future requirements determination and initiates other actions, such as the resourcing process." However, there is no formal disposition decision codified in DoD policy outlining organizational involvement.

Why Improvement Has Been Inadequate

There really are two questions imbedded here. The first asks if matters are getting better or worse as we continue changing the acquisition system. Secondly, are we actually applying industry best practices? If so, is this causing improvement? Many will say that we are seeing no real improvement. For many of the reasons that we have already discussed, we continue to take one step forward and two steps backward in relation to an effective development and acquisition system.

... The DoD's development time lines should be limited by the pace of technology development, not the time needed to work the acquisition processes.

a temporary capability that is not enduring but needs to be maintained for some period, or (3) terminated if it addresses a niche capability that is not enduring, nor is it to be maintained for current operations." This report found that only 9 of the 31 entities actually considered transition to be part of their missions. When roughly one-third of the organizations assigned an urgent acquisition mission are involved with a transition disposition decision, it is not surprising that there is no formal disposition process.

Also, the timeline in making a disposition decision is not standard. "It is JIEDDO's [Joint Improvised-Threat Defeat Organization's] policy to decide within 2 years whether to transition or transfer the capability over to a service or agency or to terminate it. ... The Special Operations Command determines at the 1-year mark whether the capability is still needed in-theater, and if so, defines out-year funding requirements and how the funding will be obtained," the 2011 report added.

The Army instituted a process to correct this gap. The Army used the Capabilities Development for Rapid Transition process to make the disposition decision until 2015 when an

Are we using industry best practices? The short answer in some cases is yes, but in most cases is no. One good example is DoD's attempts to implement agile software development methods. As we ask our vendors and our own developers to do agile development, we often ask at the same time that they not follow all of the principles of agile. As a result, we only follow industry best practices in part.

We employ only parts of best practices because we are not in the same business as our industry counterparts. What industry are we in? From the beginning of the United States, the Army and the Navy have been in the business of "Providing for the common Defense." This has meant either preparing for war or waging war. With our industrial base, and the best uniformed men and women in the world, the United States has been great at both waging and preparing for war. However, in today's world we can no longer prepare for war, and this requires that we develop differently. We must continuously develop as if we actually are at war. The most important thing to learn is that we cannot ignore or change fundamental truths about technology, business and war. Carl von Clausewitz said that "War is merely the continuation of policy by other

means.” Sun Tzu said that “All warfare is based on deception.” We might similarly say that “War is the business of the Department of Defense, so doing acquisition as if we are in a shooting war is the business best practices of the Department of the Defense.”

How Wartime Acquisition Is Different

Over the last 60 years, there have been several good examples of wartime acquisition. For brevity’s sake, I will only examine the two key wartime development efforts. The first is World War II and the second is Operation Enduring Freedom (OEF). During World War II, the U.S. economy was mobilized for wartime development and production in an unprecedented way. The keys to not only producing high volume but developing rapidly were:

- High-risk development (a lot of failures).
- Schedule-driven development (develop and deliver the

about changing how we manage development and make the process go as fast as possible given the technical and manufacturing challenges of delivering a useful military capability. It is not about just focusing on the process and on departmental and congressional oversight.

We find, again, that the best practice is to conduct acquisition in a manner consistent with only our key stockholders and key interests. This drives us toward wartime acquisition policies and not traditional acquisition, for the latter is forced to deal with highly conflicting, and unaligned interests.

Best Practice: In time of war, acquisition trades resources for time. But this is not only a matter of money. The most important resources applied are talent, creativity and risk. Success in these cases is created by small highly skilled teams that have the authority to manage risk and deliver product. This is also how high-tech start-ups work.

**On the positive side,
a number of very innovative and
aggressive processes have been developed
by the DoD and other government organizations
to reduce time and improve the acquisition
efficiency.**



best solution at a specific date).

- Establish very high-skill teams with complete authority to manage their programs.
- Have teams, including contractors, that are worthy of being invested with high degrees of trust.

In World War II, the government staff and the contractors worked literally side by side to develop and deliver the new systems.

In the second example, OEF, DoD created a number of new organizations to develop and deliver needed new systems. In a manner very similar to the development done during World War II, the acquisition processes of the Army Rapid Equipping Force (AREF) was conducted by small high-level groups doing development at schedule-based programs, in work closely coordinated with the users. Since the days of OEF, there has been a general recognition that DoD needs some level of rapid acquisition.

What is the end state we are working toward? It’s not about making the acquisition process go faster than at present; it’s

Should We Change the System?

The key objectives are: First, acquisition must be faster (and in some cases a great deal faster)—as fast as is practical, provided it is based on good design and technical risk. Second, the requirements for systems should be responsive to the real-time needs of operational field commanders (needs influenced by threat and by capabilities of technology). Third, we should plan for the contingency that some development efforts inevitably will fail and have alternative systems development at the ready to come in rapidly behind any failures. Fourth, it is critical that defense systems have the latest technology.

Conclusions

A number of key new methods are required to properly implement the needed changes. The template for these changes has been drawn for the use of the AREF and other organizations.

The keys are:

- The development teams need to be both small and highly skilled. They also must have direct operational experience and be in constant (daily) contact with commanders in the

- Developers need responsibility and flexibility to be positively engaged in every aspect of the design and development of the system, including making design decisions and directing the vendors (constructive changes to contracts).
- In order to make smart and efficient decisions about the development of complex systems, project teams need full budget authority over program funding.
- It is most important that we start using technology effectively in program management. This includes dynamic requirements generation. There must be continuous development and updating of system design requirements throughout development, fielding and operations. And these changes must take into account changing threats and the capabilities of other systems in the field to give the commander the greatest capability and flexibility.

reform has a limited effect on how we actually do acquisition. A number of major acquisition reform, and many high-level initiatives (including Better Buying Power) have changed how we do acquisition. But for a wide range of reasons, DoD acquisition still has as many if not more issues and problems as ever. More than 60 years of acquisition experience since World War II has shown us is that we will only radically change how we do acquisition in response to the critical needs imposed by war. So the inevitable conclusion is that the real driver for change in the acquisition system are the needs of the warfighters (lest they suffer additional and unnecessary loss of lives) and the imminent possibility of losing a war.

The idea of using traditional or private industry as a guide for DoD operations is highly flawed at best (limited to only parts of DoD's operations) and potentially dangerous. The military acquisition system must be relied upon not to create profit or private-sector jobs but to ensure the very survival of the nation, its people and its values.

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Defense AT&L: May-June 2018

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S U R V E Y



John T. Bailey

When I arrived to my program management office (PMO) 9 years ago, my colleagues and I frequently met in the office of the chief engineer (CE) to troubleshoot problems. It often went something like this:

Me: "Aircraft XYZ is broken, needs a temporary repair, and one-time flight. We've created the repair procedures and are ready to provide them to maintenance. What's next? Who needs to approve them?"

CE: "What did we do last time? Did we do a risk assessment? Did we have the program manager sign it? Did we coordinate with the operator?"

Me: "I don't remember. I'll research it."

Next, I would seek a colleague who would describe his experience. Of course, it differed from what I had intended. We would huddle again in the CE's office and decide whether to repeat the previous process or do something different.

The result was always the same: The airplane was returned to safe flight with appropriate approvals, but we killed hours trying to determine the approval process—something we had accomplished many times but not often enough to have memorized it.

Bailey is a chief engineer in the Air Force Life Cycle Management Center at Wright-Patterson Air Force Base in Ohio.

Finally, after several years of déjà vu, the CE and I took the time to write an organizational process. We printed all regulations, sequestered ourselves off-site, mapped the flow on a whiteboard, and authored the rubber-on-the-road process document. The result provided clear guidance to engineers and enabled consistent execution.

Processes Spread... Along With Side Effects

Similar situations occur across all Department of Defense (DoD) acquisition. We need useful process documents to instruct, enable repeatability, incorporate lessons learned, and make us efficient. However, as I have gained experience as a creator, implementer, enforcer and leader, I have discovered processes also have significant negative side effects. Just as a physician must beware of potential side effects when prescribing medicine, we leaders must beware of potential side effects when prescribing processes.

My aim herein is to share three side effects that I have personally experienced. I propose that leaders adopt and communicate new principles to reframe the mindset of our acquisition workforce.

Side Effect Number 1: Distraction

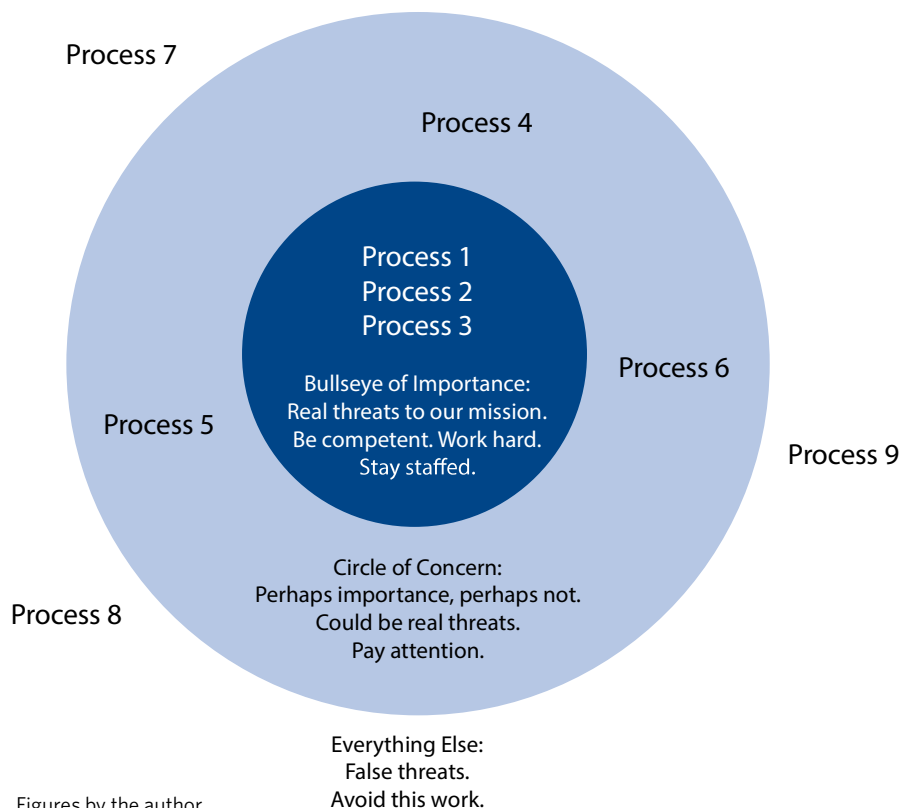
A few months ago, another government agency agreed to lend our PMO an aircraft for testing. This partnership would save taxpayers several hundred thousand dollars.

This was a unique situation and our organizational processes did not prescribe exactly what needed to be done for airworthiness, test or liability. Our engineering team dove deep into the details, resulting in an excellent, several-page-long justification on how we would execute in compliance with affected regulations.

Unfortunately, the critical thinking about the test, which was not a trivial undertaking, was limited to a couple paragraphs. We had spent the majority of our time and brainpower on ensuring compliance with regulations, and not on ensuring a safe and technically adequate test. Our concern about compliance distracted us from our primary role.

We need to ensure that our mindset has a role for processes, but only a role in service to our DoD acquisition mission. Perfect process execution does not equate to mission success. Our mission is not to acquire and sustain process artifacts. Our mission is to deliver capabilities—a warfighter's edge. Every process, form, coordination and approval requires time and

Figure 1. Circle of Relative Importance



money. The expense must be worthwhile. Often we limit our concerns to liability and regulatory noncompliance. We rarely think and talk of limited time as our threat.

Consequently, every acquisition organization should be graded on mission accomplishment—not process compliance. An inspection should focus on whether we met our commitments to the warfighter. Did we appropriately equip them? If not, why not? Did we tailor existing processes? If we didn't have the authority, did we raise the issue to the right decision level?

Over the years, I have become more intentional about communicating how processes contribute to fulfilling our mission. I no longer begin trainings, e-mails, or process documents with a long list of prescribing regulations. Rather, I explain how the process enables us to successfully equip warfighters. If our workforce doesn't believe in the purpose of the process, they will likely undermine it with passivity or slander.

Another communication tool I use is a circle-of-importance chart (Figure 1). The chart clarifies to my team where I expect full compliance, where we can evaluate compliance case by case, and where I want them to maximize tailoring. Acquisition processes always will need to cover enormous breadth. It is the leader's responsibility to orient their people to which processes are most valuable to the mission and which are not.

Side Effect Number 2: Disbelief

In preparing for my unit's compliance inspection this fall, I tried to keep count of the Service, Major Command, and Center-level regulations that a PMO's engineering workforce must follow. These are documents that say directly or indirectly "The program manager (PM), in coordination with the CE, shall" I gave up counting at 54 process documents, totaling 1,638 pages. I had not started counting DoD-level regulations, military standards, or any guides and templates.

I honestly try my best to keep up—periodically checking multiple websites, downloading documents, printing and building

- **At the right level:** The process is prescribed at the correct organizational level. We have not prescribed anything that can be figured out by lower levels.

Committing to these characteristics should result in less regulations and leaders who reward performance for simplification, elimination, and streamlining. As I've updated my process documents, I've counted words to ensure reduction. (And the instructions are undoubtedly improving.) Right now is the perfect time and opportunity for process killers. President Trump's Executive Order 13771 requires any new regulation be accompanied with the elimination of two existing regulations. Every person in acquisition needs to embrace this guidance—

We had spent the majority of our time and brainpower on ensuring compliance with regulations, and not on ensuring a safe and technically adequate test. Our concern about compliance distracted us from our primary role.

binders, reading and highlighting, and distributing to my team. Frankly, though, it is tiring and unrealistic. I will never have enough staff to fully implement it. Recently I saw that a competency model had indicated we were staffed at 40 percent of the requirement level. I am in disbelief.

We must embrace the fact that we are all regulators who influence the size of the government. If we complain at home about big government bureaucracy but want to enlarge our processes at work, we contradict ourselves.

Processes should be *value-added, minimum, clear, realistic, resourced, up-to-date*, and *at the right level*. This is very hard and takes a long time! Each process I've authored has taken at least a year and involved numerous offsite meetings and peer reviews.

- **Value-added:** This will help us execute our mission and equip our talented workforce.
- **Minimum:** The document is short enough that people actually will read it. It is not redundant.
- **Clear:** We can actually understand what the process is telling us to do. It is not ambiguous.
- **Realistic:** The process actually can be accomplished.
- **Resourced:** We have the resources to execute the process. We will follow through and hold ourselves accountable.
- **Up-to-date:** The process is relevant and accurate. The people and organizations exist.

not just senior leaders. Former Under Secretary of Defense for Acquisition, Technology, and Logistics Frank Kendall used to say that we must "have the courage to challenge bad policy." Now is the time to do so!

A good litmus test is to change our terminology. Instead of calling my instructions "processes," I occasionally call them what they really are: regulations. No one ever says "I'm a regulation person." The negative connotation forces me to think harder about its necessity and scope. Am I confident this needs regulated?

We also need to communicate the values that guided the construction of the process. Without them, people will be less equipped to conduct smart tailoring. Is there another way to implement the values? I have developed charts at the beginning of my training sessions to communicate the guiding values. If you want to deviate from the process, you need to tell me how you will still satisfy the values.

Side Effect Number 3: Division

When I assumed the role of CE, I became responsible for all processes leading to safe, suitable, secure and effective products for my customers. I read military Service regulations, processes, delegation letters, and position descriptions to facilitate understanding my responsibilities.

One major frustration was reading a document describing the authority and importance of a CE, and another document

directing external approvals for every configuration change, regardless of size. (Furthermore, I would be frequently inspected.) Was I being trusted by leadership or not? Did I have autonomy or not?

Process documents and external dependencies often send mixed messages of responsibility and trust. Too easily they lead to “us vs. them” attitudes within our own teams.

The nature of DoD acquisition requires a matrixed and multi-level work environment. However, external dependencies and

and expect core values and principles to guide the rest. We should prize competence over compliance. We should aim for professionals who know their craft and can smartly advise decision makers on tailoring. We should reduce external dependencies and increase empowerment and trust. We should increase training and communication.

Admittedly, this is hard. People will disappoint us. Our natural reaction will be to write a process document. It may work in the short term, but it won't in the long. We have to resist solving people problems with processes. If someone is not

Process documents and external dependencies often send mixed messages of responsibility and trust. Too easily they lead to “us vs. them” attitudes within our own teams.

authorities can easily have negative impacts on speed, unity and creativity. External authorities can leave PMOs with the impression they only care about their discipline. On the other side, PMO staffs can develop brain-dead behaviors, such as passing the buck, because “it’s someone else’s job.” In either case, our mission suffers.

We should maintain high expectations of our professionals. Processes should start with expectations of trust and competence and show where there is freedom to act. Processes should provide enough framework for our talented people to understand their responsibility and succeed (Figure 2). Processes should get instructions right for the majority

acting with competence, discipline and professionalism, we need tough supervisory work—not a new process or external dependency for everyone.

Commit to Treatment

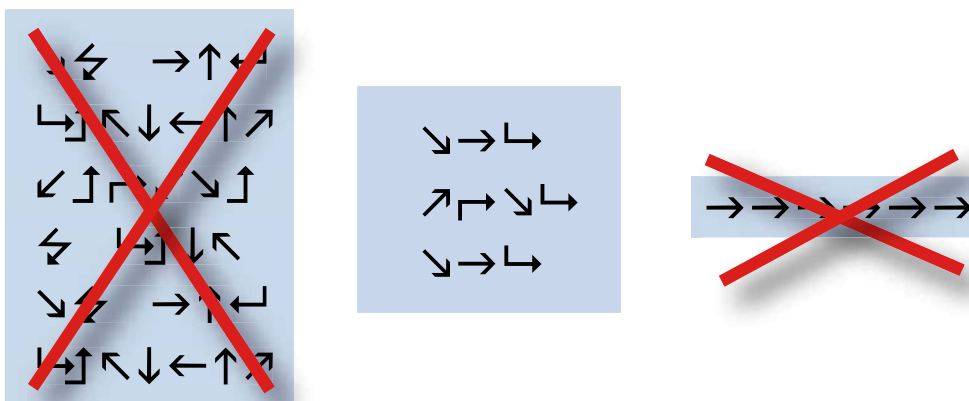
DoD acquisition is complicated and requires trained professionals. We are entrusted by taxpayers and warfighters. We need to deliver effective warfighting equipment. We need to avoid costly mistakes. We need to provide consistent and competent assurances. There is no doubt we need processes.

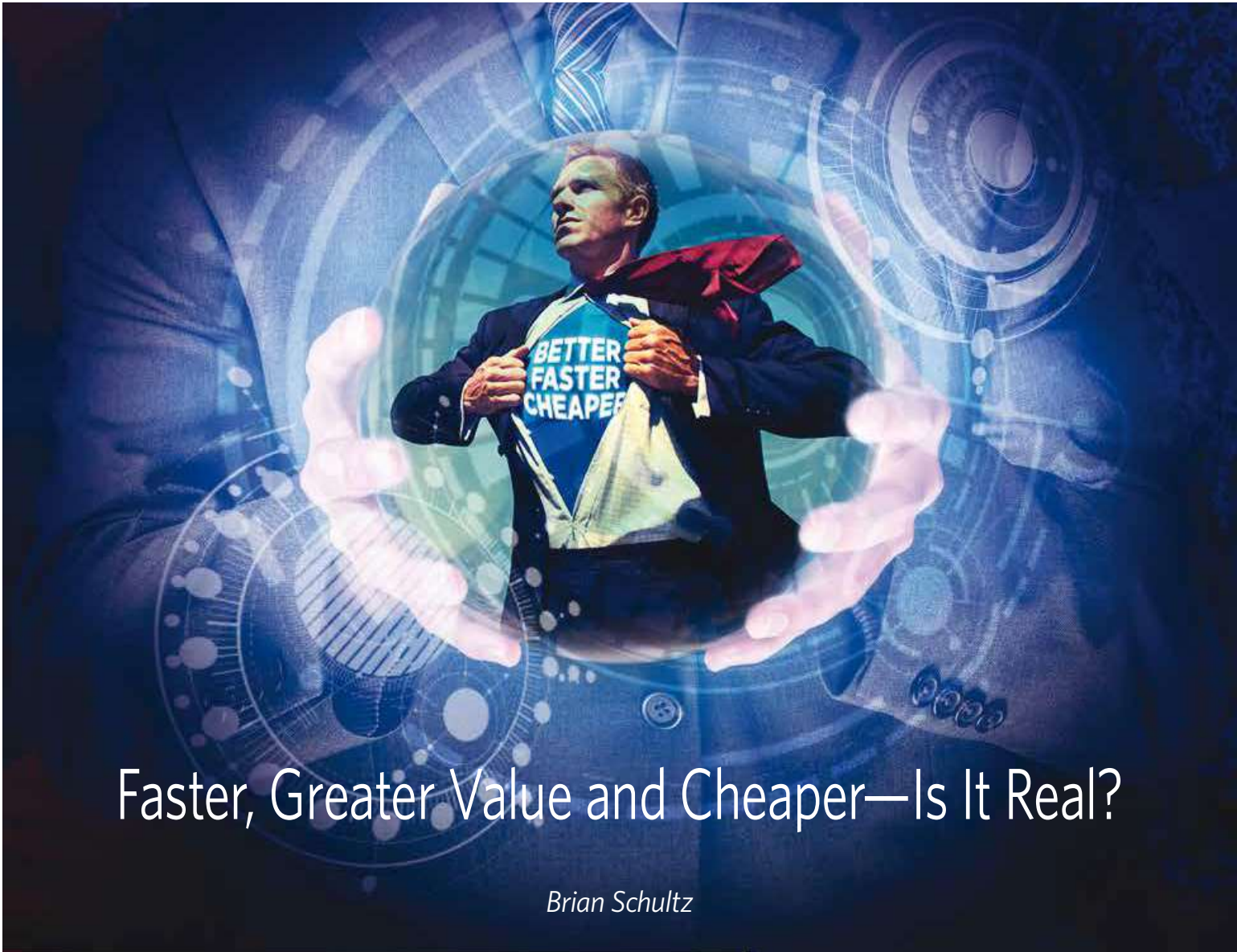
However, we must beware that processes often have unintended side effects: distracting us from our mission, creating

disbelief in each other and the system, and dividing our teams. We must be vigilant to treat these side effects. Leaders must be willing to sacrifice personal comfort, adopt new principles about processes, and frequently communicate these principles to the acquisition workforce. If people can adopt a new mindset about processes, the change has the potential to be bigger than execution—it can be cultural. &

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Figure 2. Enough Framework for Talented People to Succeed





Faster, Greater Value and Cheaper—Is It Real?

Brian Schultz

Yes, it's real! But only if we adopt a paradigm shift and give the acquisition workforce the tools and resources to make it happen. Let me explain.

While talk of acquisition reform in Department of Defense (DoD) acquisition is not new, a significant change in the paradigm for acquiring software reliant systems is being piloted in DoD. This change, when adopted more globally, will affect processes, policies, and job functions of the entire acquisition process—including requirements, testing, and budgeting. It is predicated on a shift from the current sequentially phased, product maturity model to a fully automated and repeatable, continuous integration and delivery model. One of the better known methods that embodies this shift is known as Agile Development, which is enabled by seamless Information Technology (IT) Operations of cloud-based computing resources in both the Development and Operations environments (hereafter referred to as DevOps).

Schultz is a professor of Program Management at the Defense Acquisition University's Fort Belvoir, Virginia, campus.

**Technology is nothing.
What's important is
that you have faith in
people, that they're
basically good and
smart, and if you give
them tools, they'll
do wonderful things
with them.**

—Steve Jobs

What is it? Wikipedia defines DevOps as: “a software engineering culture and practice that aims at unifying software development (Dev) and software operations (Ops). The main characteristic of the DevOps movement is to strongly advocate *automation* and *monitoring* at all steps of *software construction*, from *integration*, *testing*, *releasing* to *deployment* and *infrastructure management*. DevOps aims at short development cycles, *increased deployment frequency*, more dependable releases, in close alignment with business objectives.”

As indicated in the definition, DevOps is not only a practice but also a culture. Organizational culture change is often difficult because behaviors and attitudes of an organization become ingrained after years of operations. Changing these normalized behaviors and attitudes will likely be one of DoD's biggest challenges when this model is implemented on a larger scale. Another key word in the definition is automation, which is part of a technology wave that is realizing new and faster approaches to fielding capability.

As background, Agile DevOps is a particular methodology and should not be confused with the generic term Agile software development that initially was developed in 2001 by a group of 17 software engineers and describes a set of 12 software development principles that are known as the Agile Manifesto. These principles address items such as early and continuous delivery of valuable software, welcoming new requirements, simplicity, customer satisfaction by delivering valuable software, and more.

Several Agile-based approaches have been adopted, but the Agile DevOps distinction is its close bond between developers and operators and its fast release cadence, all enabled by leveraging cloud-native IT operations. Some programs have implemented a “Water-Scrum-Fall” approach, where Agile sprints (short development cycles) are integrated into a waterfall development method. Waterfall is based on the sequential development cycle of analyze, design, develop, test and field. Waterfall attempts to address all the requirements for that design baseline before testing and fielding the software. This Water-Scrum-Fall method is not consistent with the DevOps approach primarily because of the lengthier release frequency, treatment of requirements and testing approach. Agile DevOps will be the basis of the following discussion to achieve faster, greater value and cheaper programs.

Use of a faster and more effective software methodology has significant implications for DoD. Software is embedded in just about everything we use, including our cars, phones and household appliances. According to the March 5, 2009, NASA Study on Flight Software Complexity, the system functionality delivered by software in modern fighter aircraft grew from 8 percent in 1960 and to 80 percent in 2000 with the F-22 Raptor stealth fighter jet. This trend is accelerating and is enabled by advances in microprocessors that use less space and power while providing significantly greater computing performance. Other technologies such as cloud computing, test automation,

mobile computing, and machine learning also contribute to this increased demand for software. Since many of these commercial technologies are readily available in the open market, potential adversaries are actively leveraging them as evidenced by multiple and continuing cyber-attacks.

Before discussing the imperative to move to a new model that enables faster and high-value capabilities, we should consider the issues associated with long development and fielding cycles. Many of these are not new; DoD has emphasized reducing cycle times for many years—but with mixed results. The pace of technology advancement is so rapid that any long development effort risks producing an obsolete system before it is first deployed. Long development efforts enable our potential adversaries to deploy counter capabilities inside our acquisition cycles, potentially jeopardizing our technological edge and mission success. Long cycle times also suggest we cannot react quickly to changes in threats or exploit new opportunities without even longer extension of the cycle time. Finally, long fielding cycles are expensive and delay user feedback on system utility and value. Lacking rapid feedback, it is very difficult to make necessary corrections without another big investment of scarce resources.

Faster

A deliberate process of requirements generation and validation that attempts to address capability needs fully prior to initial fielding results in cycle times measured in years (and longer for complex systems such as fighter aircraft). Users devote significant effort to analyzing capability needs and then translating those needs into requirements documents that are vetted throughout the specific military Service and Joint Staff. Testing often is very expensive and time consuming, so testers desire a stable system design that is representative of production prior to initial operational testing. The phased acquisition process establishes a series of gate reviews (e.g., Milestone Reviews, Decision Reviews, Design Reviews) that often slow the cycle, based on progress toward greater product maturity within cost, schedule, and performance boundaries. Our contracting process can take years to award a competitive contract and often must then delay further work until a protest is resolved. So how can an approach like Agile DevOps speed up this cycle without losing the process rigor of the phased approach?

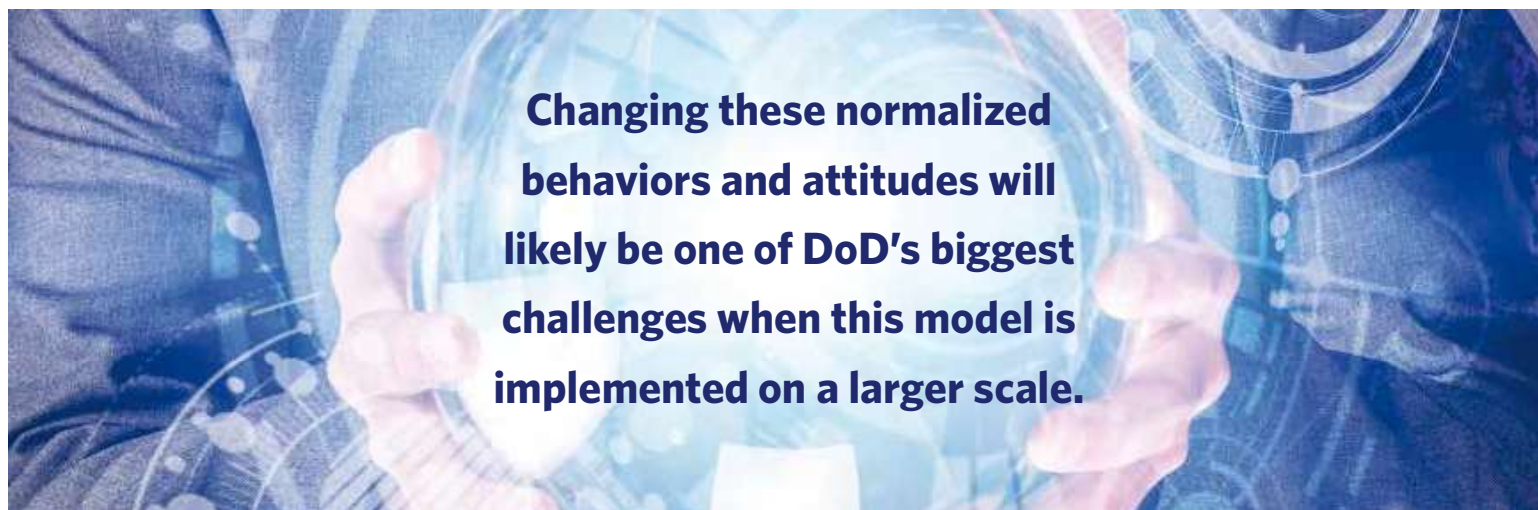
A key tenet in today's environment is that rapidly fielding technology and software capability is critical to success. We have seen how software is disrupting industries like taxi service (Uber), movies (Netflix), and hotels (Airbnb). Many businesses know that rapid fielding gives them a competitive edge when they are the first to market, providing customers with features that can attract new sales and drive growth. Companies like Capital One, Target, Walmart, Nordstrom, Facebook, Adobe, Sony Pictures Entertainment, and Fidelity Worldwide Investment have adopted this continuous integration, continuous delivery model with great success. Amazon releases new software to the Amazon.com website every

few seconds (see Jon Jenkins on YouTube at Velocity 2011). Commercial companies invest hundreds of billions of dollars each year on new IT, and it will be difficult for DoD and our private suppliers to keep pace without new and more flexible processes.

DoD also needs the rapid fielding of capabilities to counter new threats, replace hard-to-maintain legacy systems, and keep pace with asymmetric adversaries such as cyber-attackers. DoD is attempting to pilot this DevOps model with the help of organizations like the Defense Digital Service and the Defense Innovation Unit Experimental. Those two new organizations bring commercial business and technology domain expertise to assist the transition to commercial

software program, consider the learning and iteration made possible by getting the software to the user quickly. Even in a failed first release, the rapid feedback and learning will enable subsequent success as the software is iterated to meet user needs. Industry data on requirements generation and waterfall acquisition confirms that building to specified and static requirements results in building features that create no gains or perhaps even negative or lost user value to the user in 66 percent of the cases, afflicting the user's organization with software that hinders rather than helps mission success.

Consider the following from the February 2017 Government Accountability Office Report 17-317: "Although the executive



technology and methods. The recent Fiscal Year 2018 National Defense Authorization Act directed DoD to implement Agile pilot programs within each military Service.

Programs like the Air Force Air Operations Center (AOC) Pathfinder pilot have formed and started this effort. One of the early pilot software applications, the Tanker Planning Tool, was fielding very quickly and received great feedback from users. This new software application streamlined aerial refueling tanker operations, saving 350,000 pounds of fuel and about 140 man-hours per week. The AOC Pathfinder team has partnered with the Defense Acquisition University (DAU) to document lessons learned, best practices and policy recommendations to enable greater use of the approach. This partnership is helping DAU build new courseware and performance learning content to enable the workforce's consideration of this model as part of its acquisition strategy. It also enables the identification of statutory and policy obstacles that may need revision.

Greater Value

Delivering value with smaller releases of software is an important part of this new model. While it's not intuitively expected that a smaller release of software with less functionality could provide greater value than a much larger

branch has undertaken numerous initiatives to better manage the more than \$80 billion that is annually invested in information technology (IT), federal IT investments too frequently fail or incur cost overruns and schedule slippages while contributing little to mission-related outcomes. Agencies continue to have IT projects that perform poorly. Such projects have often used a 'big bang' approach—that is, projects are broadly scoped and aim to deliver functionality several years after initiation. According to the Defense Science Board, this approach is often too long, ineffective, and unaccommodating of the rapid evolution of IT."

The value obtained from Agile DevOps comes from small pieces of total system utility. These narrow slices of capability attempt to solve the user's biggest problems and provide the greatest use. Using DevOps, the challenge is to provide these priority features quickly and then build out the rest of the pain points in a prioritized and iterative fashion. By comparison, Agile DevOps can solve the most pressing needs and provide the most useful capability before a waterfall development program completes the initial requirements analysis and system design phases. This iterative feedback after the quick releases gives all parties insight to the point when enough value is deployed, avoiding development of useless functionality and saving money and time.

Cheaper

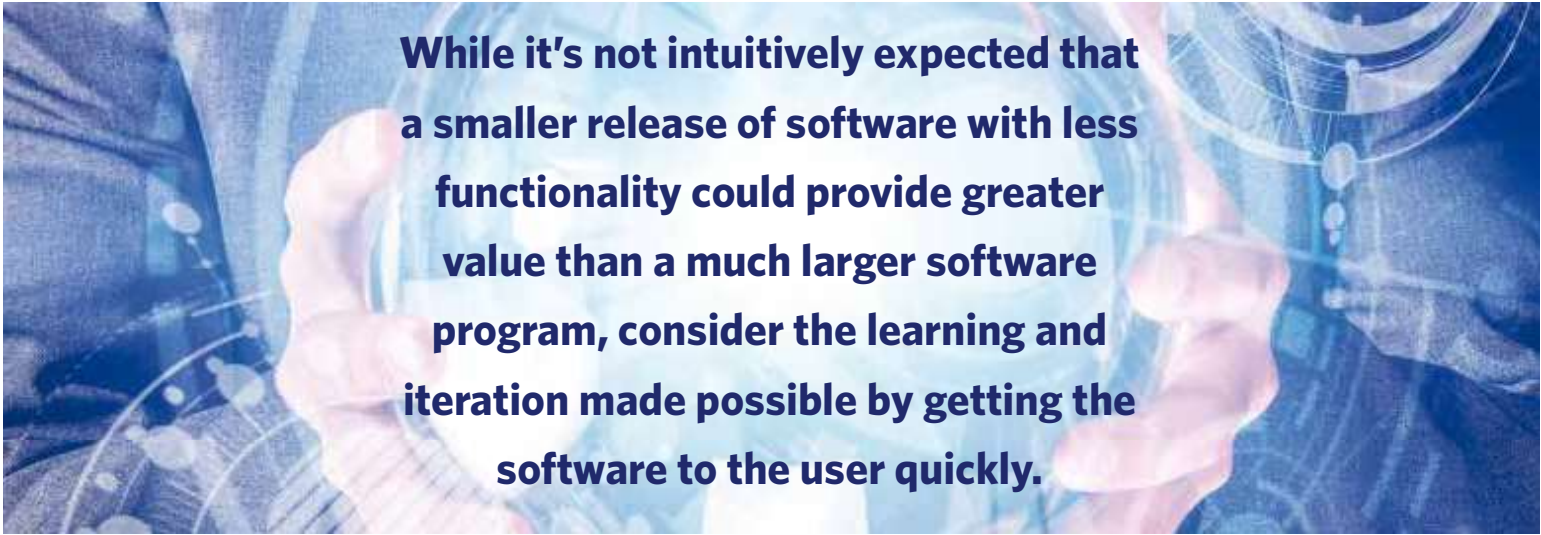
It's difficult to compare the costs of Agile DevOps to the waterfall method, but several important cost concepts are relevant. Agile DevOps does not track software development in terms of the traditional metrics of cost, schedule and performance. Rather, metrics such as value to user, throughput (measured by release cadence and backlog velocity), capacity (number of teams needed to keep up with user's prioritized backlog); and quality (change failure rate). If we accept the Agile principle of welcoming new requirements, then a frozen baseline to gauge program performance does not work.

A second consideration of cost involves automation. Agile software development leverages automation and built-in quality methods to ensure the product is always mature and

Oracle Open World conference, "but the shock is, you have to be willing to pay much less" while discussing Oracle's new fully autonomous database that requires no human labor to run, upgrade, patch or tune the software. And consider this recent news headline: "After Humans Fail, Drone Spots Lost Hunter in 20 Minutes" (*John Johnson*, Newser.Com, Dec. 19, 2017). The article discussed how a nightlong search for a lost hunter involving helicopters and extensive human foot patrols proved fruitless. The next day, a relatively new type of drone with automated sensors located the lost hunter within 20 minutes. Rescuers on foot then found him and escorted him back to safety.

Conclusion

The future is here when it comes to faster, more responsive,



While it's not intuitively expected that a smaller release of software with less functionality could provide greater value than a much larger software program, consider the learning and iteration made possible by getting the software to the user quickly.

deployable, even while changing. Automated developer and test tools are essential to enable this model. In approaches like test-driven development, testing begins at the start, not the end, in the project life cycle. Automated testing helps to eliminate error backlogs and deploy products more quickly and with better results. Automation is absolutely critical because end-to-end testing must be conducted repeatedly and iteratively to ensure quality of each viable software product. Note that cybersecurity can be enhanced with automated cyber scans and the inherited security attributes from the cloud computing environments that support the development environments.

We can reasonably expect that automation will cost less than human labor. Through technologies like artificial intelligence, machine learning, autonomy and robotics, human labor is no longer needed for many tasks and thus will shift to other roles. Reducing the need to pay for human labor and for human errors will cut costs. For example, some of the selling points of driverless cars include fewer accidents, more efficient use of space and energy, and lower costs than owning, maintaining, and insuring one's personal vehicle. Larry Ellison, Oracle's chief technology officer, said during a keynote address at the 2017

and high-value programs. However, a transition to the Agile DevOps model and other new approaches will not be easy for DoD. In addition to "unlearning" the old way of doing acquisition and adopting new processes, a big culture change is most definitely in order. Culture change is difficult and does not happen overnight. The good news is there seems to be wide consensus that change is needed and that DoD is starting to take reform actions.

Several agencies have recently announced new initiatives to accelerate fielding and streamline acquisition cycles. Innovation is becoming more than a buzzword as DoD teams experiment with new techniques to accelerate the delivery of value to the warfighter. We should remember, though, that all the new technology and methods are great, but people will be the key to success. The workforce will need rapid and relevant training, automation and software infrastructure resources, and leadership support to enable this change. Momentum is building, if we can only keep it rolling! 

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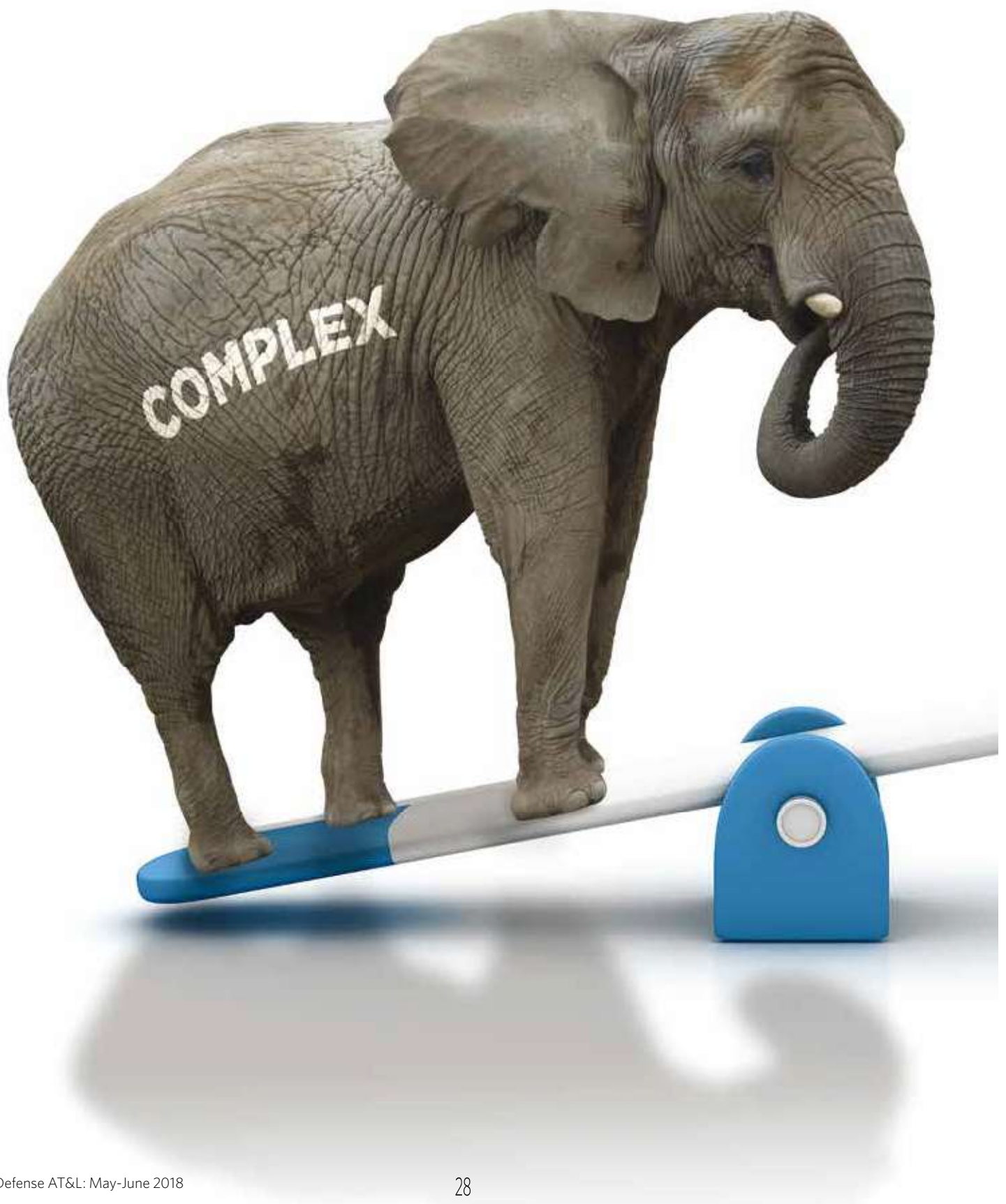
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S U B S C R I P T I O N



Sizing the Supply Chain **FROM THE TOP DOWN**

Rob Blakey ■ Michael A. Bayer, Ph.D.

Spare-part inventory has been, and continues to be, an important element of logistics support to the U.S. Air Force (USAF) fleet of aircraft. Not only are spare parts a substantial cost driver for all acquisition programs, but securing these parts in correct quantities is critical in ensuring future aircraft availability.

Inventory forecasting models typically use historical, or expected, item demands on the supply system, coupled with expected delay times, in calculating the size of inventory necessary to support a system or infrastructure. This method often suffices for existing systems. But what about projecting inventory sizes for new, or significantly modified, systems?



One could simply select what is considered representative data and apply a set of business rules to predict the inventory requirements for any change in sustainment concept or requirements for a future system. However,

the vagaries surrounding the supply chain of a yet-to-be-developed strategy or system are such that selecting a representative system, or group of items, may be problematic and drive analysis of multiple scenarios to determine a range of possibilities. Let's look at a model that may dramatically simplify that process by eliminating all but one sole user input: the number of expected repairable items.

How Much Do Spare Parts Cost?

This effort began with a simple question: "What is the average cost of 1 day's worth of repairable inventory pipeline?" Since the pipeline is a function of daily demand, cost and acquisition time, we defined pipeline as:

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$$P = d * c * n$$

where P is the total value (in dollars) of the pipeline inventory for a particular part
d is the daily demand from inventory for a particular part
c is the cost (in dollars) of a particular part
n is the number of days required to acquire a replacement part for inventory

The initial question was suggested by the idea that if an average per part, per day pipeline cost could be established, that average cost could be then used to aid in the evaluation of alternative sustainment concepts—specifically, concepts that may increase or reduce the inventory resupply times. Using Air Force recoverable item data from March 2015 for 7,571 aircraft repairable items, the algorithm suggested that the average cost of a day's worth of repairable item pipeline was about \$10,628, with an average of 51 days in the pipeline. This average value of \$10,628 was then used to compare a predicted total pipeline value to the actual total pipeline value, about \$4 billion and about \$3.4 billion respectively, revealing a disappointing disparity. Our model provided an overestimation of approximately 15 percent.

The initial observation of the actual pipeline data suggested perhaps a number of high-cost and/or high-demand items could be skewing the estimations to the right. To investigate this premise, the same model was used while eliminating 292 items with a cost per day value of \$50,000. In this scenario, the model revealed a predicted total pipeline value of \$1.2 billion—within 8.3 percent of the actual \$1.2 billion value of the remaining 7,279 items. It was this improvement in the accuracy of the estimates that prompted further efforts to find a better method for estimating pipeline values by leveraging the entire data set.

Dealing With Difficult Data

Visual observation of the 2015 data revealed that while 86 percent of the items fell below the \$10,628 average, the remaining 14 percent were high enough to significantly impact the resultant average calculation, suggesting that segmenting the data set could prove helpful. Segmenting the data by effect on the average pipeline values into three categories provided an initial method of classifying the data:

- Distant Outliers—more than \$500 million per day (with short pipeline times) or, replacement times close to 2,400 days (with low cost).
- Contributing Outliers—below \$125,000 daily demand and replacement times less than 300 days.
- Above Average—less than \$30,000 daily demand and with a maximum replacement time of 75 days. There was no rigorous statistical testing to ensure the validity of the categories. But for the purposes of this initial effort, face validity was deemed sufficient. Also, the results, while interesting, were not particularly useful at this point.

Continuing the effort, we attempted to find meaningful break points or groupings in the data. Through repeated trial and error, four additional categories were developed based on repair cycle times: (1) Base (fewer than 10 Days); (2) Low (10 to fewer than 40 Days); (3) Regular (40–100 Days); and (4) High (more than 100 Days).

“Base” represented items with a minimal repair cycle time, “low” represented items somewhat below average; “regular” represented items around and above average; and “high” represented the very items with very large repair cycle times. The categories’ usefulness was confirmed by examining the data in weapon system subsets and comparing them with the total. More specifically, we wanted to know if the item groupings for all aircraft items held true for platform level data. As shown in Table 1, the item groupings at the aggregate level hold true at the platform level as well.

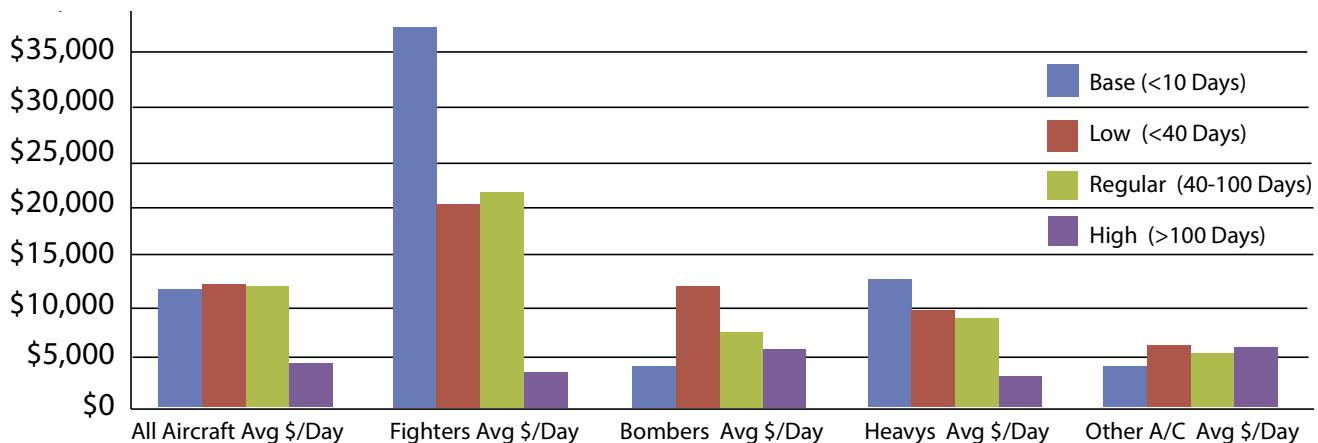
While uniformity of data across the enterprise was clear, the related cost of each repair cycle time category was less consis-

Table 1. Item Groupings at Aggregate and Platform Levels

All Aircraft	Count	% of Total Items	Avg Days
Base (<10 Days)	321	4%	5
Low (<40 Days)	4272	56%	24
Regular (40-100 Days)	2168	29%	61
High (>100 Days)	841	11%	172
Fighters	Count	% of Total Items	Avg Days
Base (<10 Days)	67	3%	6
Low (<40 Days)	1187	56%	24
Regular (40-100 Days)	606	29%	61
High (>100 Days)	259	12%	159
Bombers	Count	% of Total Items	Avg Days
Base (<10 Days)	58	3%	6
Low (<40 Days)	1097	54%	25
Regular (40-100 Days)	633	31%	61
High (>100 Days)	226	11%	187
Heavy's	Count	% of Total Items	Avg Days
Base (<10 Days)	166	5%	5
Low (<40 Days)	1663	55%	25
Regular (40-100 Days)	821	27%	61
High (>100 Days)	376	12%	165
Other Aircraft	Count	% of Total Items	Avg Days
Base (<10 Days)	42	4%	5
Low (<40 Days)	720	66%	24
Regular (40-100 Days)	250	23%	62
High (>100 Days)	79	7%	186

Tables and figures developed by the authors from government data.

Figure 1. Platform Groupings Versus All Aircraft Aggregation



tent. As illustrated by Figure 1, none of the platform groupings aligns well with the all aircraft aggregation. On the low end, “Other Aircraft” indicated approximately half the all aircraft values. On the upper end, the Fighter category is particularly problematic since all categories except “High” are dramatically larger than the all aircraft average. This divergence in the cost across platforms led to poor results when testing actual legacy weapon system pipelines against the average cost values using platform groupings.

Using the early data evaluation, once again, it was clear that a small number of items with dramatically high cost were the primary reason for cost inconsistency. That irregularity was not eliminated with the weapon system platform aggregations. Closer examination of the data revealed some weapon systems had a significantly greater number of contributing outliers (and above average items) than others. As demonstrated in Figure 1, Fighters tended to have the largest concentration of these high-cost and high-demand items. However, these items are not limited to the Fighter platform type. Specifically, the B-1 Bomber and the KC-135 jet-powered refueling tanker also had relatively high numbers of “outliers.”

misstatement; however, these descriptive terms were chosen because of the nature of the supply pipeline more than because of the actual technology. Therefore, “simple” systems were those that had less than 2.5 percent high-cost contributors in their pipelines, while “complex” systems had greater than 3.25 percent high-cost contributors. The F-15 Fighter fell between the discriminating thresholds.

Exploring the relationship between the high-cost and high-demand items and a weapon system’s actual calculated pipeline is important too. Figure 2 illustrates that, with actual pipeline value growth, the number of high-cost and high-demand items also grew, revealing that the ratio of high-cost and high-demand items is a dominant factor in pipeline cost. Moreover, it the number of items, does affect the pipeline, even though less dramatically. Figure 3 shows trends related to pipeline cost and number of items. In general, the number of items follows the pipeline cost with only the AC-130H gunship defying the trend.

In summary, pipeline data analysis revealed the following attributes: pipeline distributions aggregate uniformly at the enterprise and weapon system platform level, pipeline costs

The percentage of high-cost contributors, coupled with some understanding of the technical complexity of the weapon system, led to the hypothesis that “complex” systems such as the F-16 Fighter and B-1 are more similar than “simple” systems like the helicopters. To say that any military weapon is “simple” is probably a

Figure 2. High Cost Items Are Dominant Factors

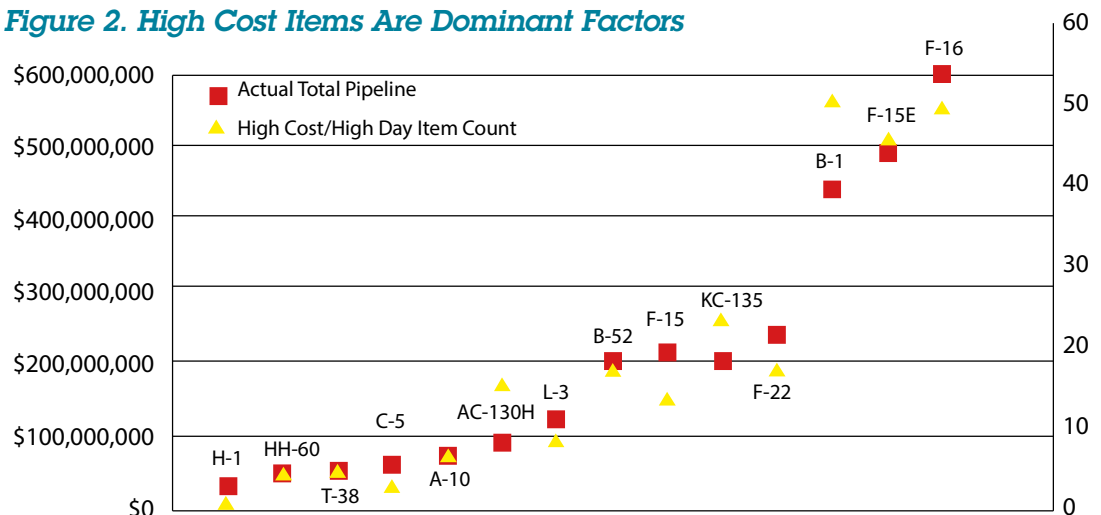
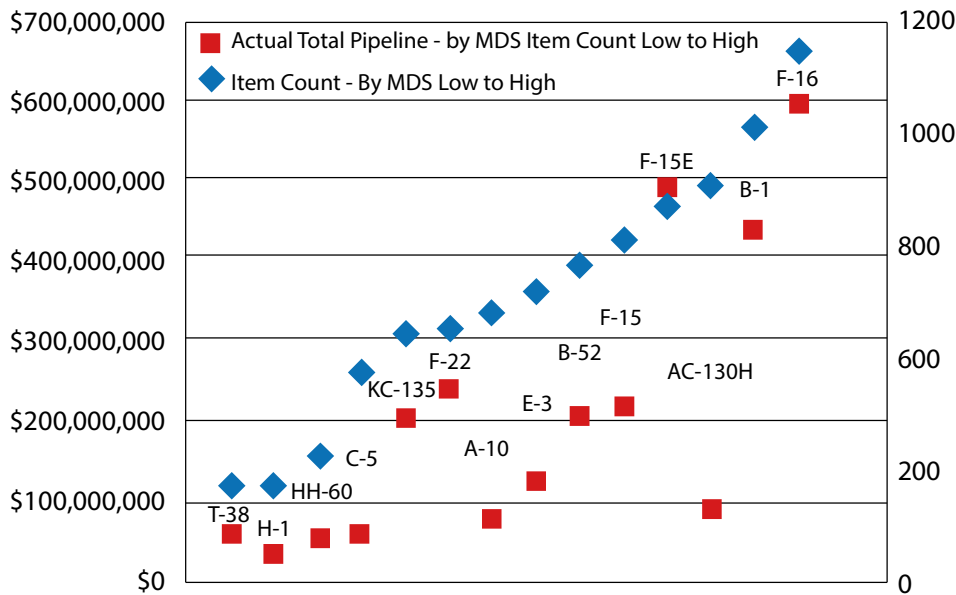


Figure 3. Pipeline Cost and Number of Items



aggregate differently at the weapon system platform level, high pipeline cost contributors correlate with actual calculated weapon system pipelines, high pipeline cost contributors tend to fall on a continuum of weapon system complexity, and the number of repairable items in a system relates to the cost of the actual pipeline.

Model Calculations

The model constructed in support of this research used the number of repairable items as the single user input element. The calculations behind the model are illustrated in Table 2. The categories shown in the equation were derived from those from Table 1's "All Aircraft" segment. The values varied somewhat since the distant outliers and contributing outliers above \$50,000 were not included in the "simple" model. The product of this arithmetic was multiplied by the number of items input by the user (N) to calculate a pipeline of a simple system and a complex system with the same number of items. Comparing multiple data sets revealed the dollar values do change, but the net effect and rough cost output from the calculations remained consistent. At its simplest level, the model performs this calculation:
Items (N) * \$451,790 = Complex solution
Items (N) * \$181,556 = Simple solution

Analyzing the Results

As previously noted, modeling at the weapon system platform level was

tested, but provided poor results. However, the concept of discrimination between "complex" and "simple" systems was ultimately chosen due to superior test results against actual pipeline values for individual weapon systems. Figure 4 shows actual pipeline values compared to the model results. In this test, the model computations used the actual number of repairable items for each weapon system. Also, weapon systems were grouped by "simple" and "complex" by their specific data characteristics. As shown in Figure 4, particular systems performed at varying levels of accuracy. Some of the more notable results are described below.

The majority of the "complex" systems track well. However, the F-16 and F-15E actuals were significantly above the complex model estimate. The F-15 and the B-52 were significantly lower than the "simple" estimate. Given the age of the platform, it would not be unreasonable to assume the B-52 would classify as a "simple" system. However, the actual pipeline value of about \$206 million fell squarely between the "simple" (\$124 million) and "complex" (\$308 million) values computed by the model. In examining these results, it was discovered that a single electronic warfare item accounted for \$62 million of pipeline.

Table 2. Calculations Behind the Research

Model	Number of Items	Base %	Base Days	Base \$	Base Cost
Complex	N *	3.8%	5	\$10,417	\$1,979
Simple				\$2,511	\$477
		Low %	Low Days	Low \$	Low Cost
Complex		55.0%	25	\$11,803	\$162,144
Simple		54.7%		\$3,292	\$44,985
		Regular %	Regular Days	Regular \$	Regular Cost
Complex		30.6%	61	\$10,552	\$196,964
Simple			62	\$4,322	\$81,997
		High %	High Days	High \$	High Cost
Complex		10.7%	173	\$4,900	\$90,703
Simple		11.0%	171	\$2,876	\$54,097
Base Cost + Low Cost + Regular Cost + High Cost					Total Cost
Complex		Total Cost			\$451,790
Simple		Total Cost			\$181,556

The F-15 was better represented by the “simple” pipeline estimation. Unlike the B-52, a tangible reason was elusive for the F-15 (736 items with a \$221 million pipeline) estimate being closer to the “simple” solution (\$134 million) than the “complex” (\$332 million). All of the F-15 characteristics point to it being a “complex” system, but the “simple” solution is \$87 million below the actual, and the “complex” solution is \$112 million above. Similar to the case of the B-52, the F-15 actual fell between the “simple” and “complex” points.

Finally, while the estimations are not precise, the model produced generally unbiased results. That is, the estimates generated were not consistently over or under the actual pipeline values of current systems.

Model Applications

The primary use for the model developed as a result of this research would be to estimate supply pipelines for future aircraft systems—specifically, systems that are in the post-Milestone A but pre-Milestone B phase of acquisition. At this point in the acquisition cycle, it is clear that a system is to be purchased, and the general system characteristics are known. But unclear at this point is the specific system and its configuration—hence the need for an estimation methodology.

Another application is as for a method for estimating the cost, or savings, associated with a change to supply chain dynamics. Examples would include providing a means to weigh the relative impact of implementation of a method to accelerate pipeline times for high-cost/high-demand items or to reduce the overall average pipeline time for a system or systems. Conversely, one could estimate the cost of increases to pipelines as a trade-off for another product support element. For example, one could estimate the cost trade-offs between slowing the repair cycle (e.g., eliminating a work shift) and increasing the supply chain to accommodate.

Comparing multiple data sets revealed the dollar values do change, but the net effect and rough cost output from the calculations remained consistent.

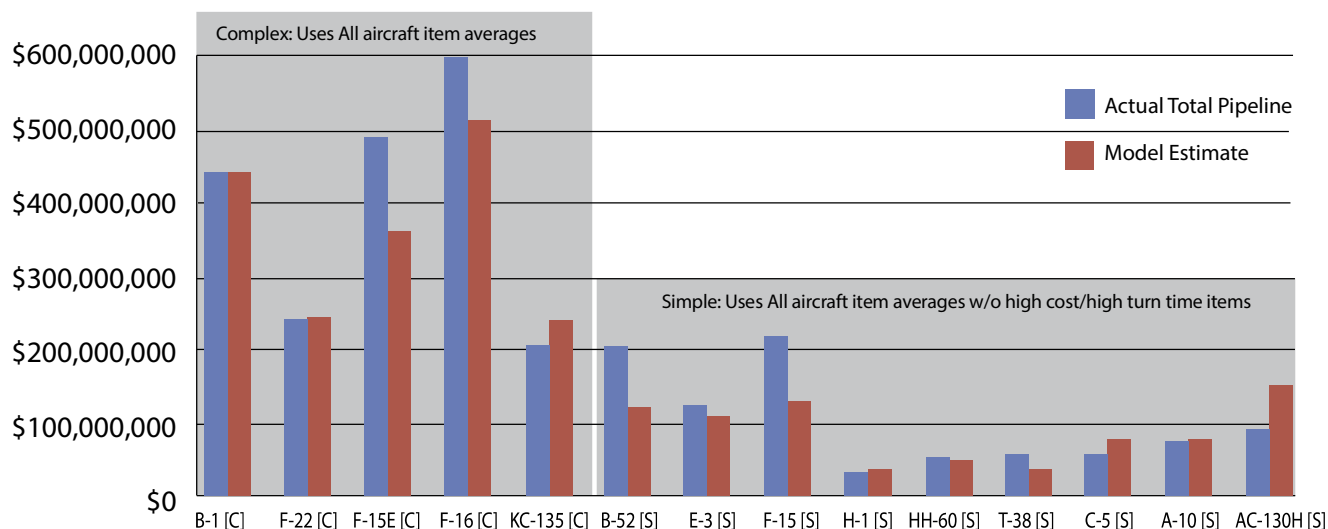


Conclusion

This study developed and analyzed a method for computing aircraft weapon system supply “pipelines” using a single user input data element: the number of repairable items in a weapon system. Exploration of supply chain data revealed the following characteristics: Pipeline distributions (groupings) aggregate uniformly at the enterprise and weapon system platform level, pipeline costs aggregate differently at the weapon system platform level, high pipeline cost contributors correlate with actual calculated weapon system pipelines, high pipeline cost contributors tend to fall on a continuum of weapon system complexity, and the number of repairable items in a system impacts the cost of the actual pipeline. Using the uniformity related to high cost, high demand correlation and number of repairable items, it is possible to estimate pipeline values of future systems or concepts. Coupling legacy data with an expert judgment of future system and concept attributes (the level of system complexity and expected number of repairable items) the expected pipeline cost can be projected. &

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Figure 4. Varying Accuracy of Systems’ Performance



Audit Readiness— THE TIME IS NOW

Stephen Speciale

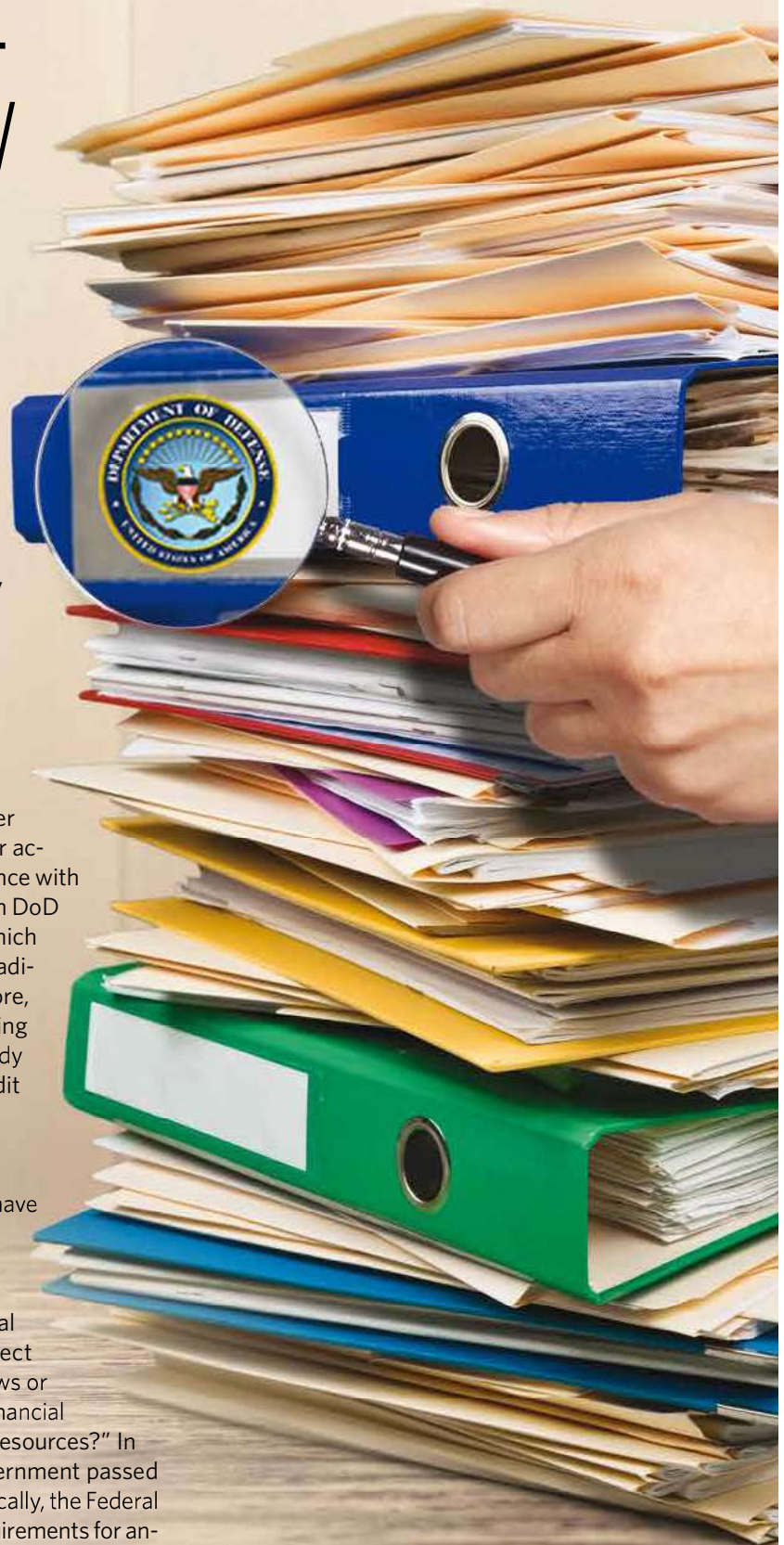
It is Fiscal Year (FY) 2018, and most Department of Defense (DoD) financial management personnel have anticipated this as the highly visible year in which DoD will begin, and hopefully pass, a full financial audit.

However, such efforts and outcomes should remain a high priority for not only financial management personnel but for all DoD personnel. The current environment consists of emerging threats across the globe, users requiring new capabilities to combat such threats, tighter budgets, national debt soaring to new highs, and greater accountability for taxpayer resources. The lack of compliance with laws or accountability of taxpayer resources can result in DoD program budget cuts or even program cancellation, which ultimately threatens DoD's ability to maintain military readiness supporting the United States and its allies. Therefore, it is imperative that DoD swiftly resolves its outstanding financial management issues and achieves an audit-ready state as outlined by the Financial Improvement and Audit Readiness (FIAR) objectives.

Background

The federal government's financial management issues have lingered for several decades. Issues include weaknesses in financial statement reporting, financial management systems, and accountability (valuation or existence) of government property. The golden question for the federal government has been: "How can the government expect individuals and corporations to comply with financial laws or regulations when the government cannot comply with financial laws or regulations and notably mismanages taxpayer resources?" In attempting to resolve the longstanding issues, the government passed laws intended to improve processes and systems. Specifically, the Federal Managers Financial Integrity Act of 1982 established requirements for annual reporting to provide reasonable assurance that entities' expenditures are properly recorded, systems produce reliable financial reports, and

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assets are accounted for. In addition, the Chief Financial Officers Act of 1990 introduced enhanced financial management practices for the government after finding financial management systems were obsolete, inefficient and failed to provide complete, consistent, reliable or timely information.

Although some government departments did improve financial management processes and systems, DoD struggled to eliminate weaknesses and achieve an audit-ready state. DoD's issues were so prevalent that Congress included FIAR requirements in the FY 2010 National Defense Authorization Act (NDAA) as a DoD priority. In the NDAA, Congress had assigned the Office of the Under Secretary of Defense (Comptroller) (OUSD[C]) as the lead office for the FIAR efforts and marked Sept. 30, 2017, as the date for DoD's financial statements to be audit ready. Since 2010, OUSD(C) executed multiple initiatives to improve practices, including:

- Creating consistent audit guidelines and capabilities for DoD entities to have in place to pass audit
- Developing a financial management training certification program (requirement for DoD financial management personnel)
- Introducing new Enterprise Resource Planning business systems and eliminating some legacy systems

Although OUSD(C)'s initiatives fostered progress, deficiencies and corrective actions still exist that prevent DoD from achieving the FIAR requirements outlined in the FY 2010 NDAA. DoD remains the only federal department that has never undergone a full financial statement audit.

Where We Are

DoD is one of the largest and most complex organizations in the world. The information below supports DoD's challenge in conquering its financial management problems. DoD:

- Accounts for about half of the government's total annual discretionary budget
- Possesses more than 70 percent of the government's total assets
- Maintains more than 200 business systems that collectively process millions of transactions that feed into DoD financial statements

Recent evaluations and comments by the Government Accountability Office (GAO), DoD Inspector General (DoDIG), and the Senate Armed Services Committee (SASC) emphasize the severity of DoD's problems and potential consequences if audit readiness is not achieved. In January 2017, GAO's Comptroller General concluded that independent auditors' financial-related material weaknesses found during FY 2015 and FY 2016 reviews confirm DoD maintains serious financial management problems associated with achieving FIAR objectives. In November 2017, the DoDIG, within its FY 2018 "Top DoD Management Challenges" report, stated "longstanding financial management challenges continue to impair the DoD's

ability to provide reliable, timely, and useful financial and managerial information to support reported financial statement balances." Additionally, the lack of reliable financial information prevents its full use in operating, budgeting, and policy decisions." In response to the DoDIG's FY 2018 report, the SASC chairman, Sen. John McCain, stated: "Unless we get this audit, this committee will start acting in ways that will force it. We will withhold acquisition and we will withhold authorization. You cannot run an organization efficiently if you don't know how much it costs. And frankly, you all have been getting away with it for years." The SASC plays a critical role in Congress' annual enactment process, which creates NDAA's (allowing programs to exist with recommended funding levels) for the president to sign into law.

In addition to DoD's unique issues, a much larger challenge looms affecting the entire federal government. The challenge is effectively managing resources and making sound financial decisions that will foster sustainable long-term fiscal results for our country. Both GAO and the Congressional Budget Office reported in 2017 that the government's current fiscal path is unsustainable. The nation's total gross debt ballooned to new heights in 2017; specifically, total gross debt increased from \$5.6 trillion in 2000 to \$20.6 trillion in 2017 (a 266 percent increase). The government has recorded only five surpluses since 1969, with the last occurring in 2001. Further, when analyzing debt measured as a percentage of gross domestic product (GDP), the current debt-to-GDP percentage is the highest since World War II and is expected to grow further in coming years. This percentage measures the health of a country's economy by comparing cumulative debt to goods and services produced and sold. Since the current measurement is 106 percent, the current situation is not favorable as debt exceeds GDP and more worrisome that the measurement is expected to increase further.

Typical causes of high debt-to-GDP percentages include excessive government spending and economic slowdowns. Although health care spending and Social Security are the primary drivers for national debt increasing, all departments are affected by the worsening trends. The national debt situation and debt-to-GDP measurement will not make the federal government's budget or enactment decisions any easier if the nation's spending continues to outpace revenues each year. DoD's problems, coupled with the federal government's debt problems, make FIAR efforts more important than ever.

Where We Are Going

Resolution of the financial management challenges plaguing DoD will not be easy—nor will they be resolved on their own. Since it is required to complete a full financial audit this fiscal year, DoD must ensure timely completion of FIAR requirements. If FIAR requirements cannot be fully achieved prior to the audit, DoD must at least illustrate the value or progress realized since FIAR efforts began, including extensive plans to correct known deficiencies or action items moving forward within reasonable timeframes. DoD's FIAR efforts have

been costly to the taxpayers and will remain so. In May 2017, OUSD(C) estimated DoD needed \$4.9 billion from FY 2017 through FY 2022 to obtain and maintain an audit-ready state. As a result, DoD must be able to show worthwhile improvements based on the public's investment in DoD to reach such a state.

DoD's financial management personnel have vital responsibilities to comply with FIAR requirements in a timely manner and to maintain effective controls both now and in the future. Such duties are important for accountants, auditors, budget analysts and cost estimators. However, the responsibilities extend to all DoD personnel. Human resources personnel must attract, hire and retain qualified personnel. Engineering personnel must ensure that all program technical requirements are identified and reasonable, based on users' needs. Acquisition and program management personnel must effectively coordinate with all program stakeholders (including contractors) to ensure that capabilities are delivered on schedule at reasonable costs. Contracting personnel must select appropriate contract types for program acquisitions and ensure that contract deliverables foster effective cost management and associated reporting. Logistics personnel must effectively execute operations and support functions, including account-

ability of government property, while keeping life-cycle costs within budgets.

The inability to complete the requirements outlined in the FY 2010 NDAA puts the entire DoD at risk. If lawmakers deem DoD's efforts unacceptable after the FY 2018 audit, DoD will have significant hurdles to conquer when requesting annual budgets for ongoing and future programs. Budget issues could affect government property, weapon systems, personnel, and other resources. Such issues would jeopardize DoD's operations for maintaining readiness supporting the United States and allies. Further, as allies continue to face emerging threats, they will seek DoD's proven capabilities through Foreign Military Sales (FMS) cases. Executing FMS cases, especially during cost negotiation and contracting phases, will be extremely difficult if DoD does not accurately manage or price its own assets.

DoD must obtain and maintain accountability over its budgets and assets to allow leadership to make informed decisions and provide taxpayers assurance that their resources are managed appropriately. The time for achieving audit readiness is now. &

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Adding to the **Source Selection Arsenal**

David M. Riel

Over the last several years, Lowest Price Technically Acceptable (LPTA) source selections have proliferated at the expense of the defense industry-preferred trade-off source-selection process.

The defense industry has campaigned hard to malign the use of LPTA source selection. With the rise of LPTA during the sequestration days of 2012 and 2013, two major defense industry associations named addressing the improper use of LPTAs as their top issue and policy priority. Industry insiders describe the LPTA as a “hate-hate relationship” and say that “the hate continues,” saying the rising use of the LPTA process puts the incumbent contractors at a major disadvantage—and their employees in an even worse position. Cries of “you get what you pay for” and it’s a “race to the bottom” reverberate throughout their literature.

However, a representative of government employees has countered that the industry’s criticisms are merely driven by a desire to maintain profits, claiming that the critics’ “outrage is disingenuous” with regard to the Department of Defense (DoD) alleged “war on profits.”

Promoters underscore that LPTA has helped produce faster and simpler source selections and avoid protests. However, critics note that, when price is the only meaningful criterion, the risk of alienating industry customers is

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In times of tight defense budgets, increases in bid protests and limited experienced contracting resources, LPTA has become a very attractive option—perhaps too attractive.



greatly decreased—so why not protest? They claim that there has been no reduction in the number of protests. Yet, a Naval Postgraduate School (NPS)-sponsored study indicates that only a small percentage of filed protests have been LPTA-originated. Who is right? Who is wrong? Is there another option?

The Federal Acquisition Regulation, in recognition that the relative importance of cost versus non-cost factors vary according to the needs of a particular acquisition, establishes the “best value continuum.” When the requirements are clearly definable and there is minimal risk of unsuccessful performance, price may play the dominant role—and this would support use of the LPTA source selection process.

LPTA works exactly the way it sounds like it would: Once a proposal has been determined to meet or exceed the minimally acceptable non-cost criteria, the offeror with the lowest price is awarded the contract. In essence, price is more important than all non-cost factors combined. At the opposite end of the continuum is the trade-off process, where it may be in the best interests of the government to award the contract to an offeror other than the lowest-priced or highest technically rated option.

This source-selection process—which is appropriate for less definitive requirements, and where more development work is required or greater performance risk is imposed—requires that the way the offers will be evaluated be thoroughly understood and communicated. This would include the evaluation factors and their subfactors, along with their relative importance to each other.

In times of tight defense budgets, increases in bid protests and limited experienced contracting resources, LPTA has become a very attractive option—perhaps too attractive. The rise in LPTA usage and the outcry from the defense industry led former Under Secretary of Defense for Acquisition, Technology, and Logistics Frank Kendall to issue a March 2015 directive memorandum, “Appropriate Use of Lowest Priced Technically Acceptable Source Selection Process and Associated Contract Type,” outlining the proper limited use of LPTA.

The memorandum states that “LPTA is the appropriate source selection process to apply only when there are well-defined requirements, the risk of unsuccessful contract performance is minimal, price is a significant factor in the source selection, and there is neither value, need, nor willingness to pay for higher performance. ... Lowest Priced Technically Acceptable (LPTA) has a clear, but limited place in the source selection ‘best value’ continuum.” In May 2016, Congress got involved, perhaps spurred by a letter from the Professional Services Council, and an LPTA solicitation protest by two large service contractors on a contract worth up to \$17.5 billion over 10 years. Restrictive language was added to the Fiscal Year (FY) 2017 National Defense Authorization Act (NDAA—a number of justification and reporting requirements were added. For example, contracting officers now must include written justification for use of LPTA in the contract file, consider full life-cycle costs, avoid to the “maximum extent possible” using LPTA for acquisition of personal protective equipment, information technology (IT), cybersecurity, system engineering and other “knowledge-based professional services.” Also the Comptroller General was required to submit a report on the number of LPTAs used on contracts that exceed \$10 million, no later than Dec. 1, 2017 “and annually thereafter for three years.” Contrasting this assault on LPTA, research sponsored by NPS indicated there has been general satisfaction with the results of LPTA-solicited contractors, specifically for IT-related products. However, the sampling was limited to 19 Army Program Executive Officer Enterprise Information Systems programs (14 LPTA and 5 Tradeoff) that met the research criteria. Results determined by reviewing these contractors’ reports in the Contractor Performance Assessment Reporting System (CPARS), demonstrated a higher satisfaction with the LPTA contractors versus the trade-off contractors, possibly due to the simplicity of the LPTA contracts and/or an artifact of the small sample size.

Either way, it begs the question of who’s right and who’s wrong? Is there another option?

In 2016, the Office of the Secretary of Defense rolled out a new tool in the source-selection process, Value Adjusted Total Evaluated Price (VATEP), as a corollary to the trade-off process. VATEP was developed to objectify the value of exceeding certain non-cost factors. The logic of this was that, if the offeror knew the price value of increased performance for a particular evaluation factor, it could determine if its exceeded requirements’ solution was valuable enough to offset the

increased development and production costs. In his March-April 2015 *Defense AT&L* article, "Getting 'Best Value' for the Warfighter and the Taxpayer," Kendall stated: "We want industry to be in a position to make informed judgments about what level of performance to offer. The easiest way to accomplish this is to tell industry exactly in dollars and cents, what higher levels of performance are worth to us." Makes sense, right?

In fact, several source selections have been conducted using VATEP, which advocates a combination of objective and subjective evaluation factors in an overall trade-off process. But what happens if you greatly limited the number of evaluation factors, only allowing a small subset to have objectified, defined value? What if you then adjust the offeror price accordingly—i.e., creating a value adjusted, total evaluated price—and then award the contract to the lowest VATEP? In this way, value is added for some appropriate performance criteria, or at least one of them, while generally maintaining the simplicity and objectivity derived from using LPTA.

Let's call this derived approach, Lowest-Price VATEP, or VATEP(LP) for short. Nirvana? No. Another addition to the source selection process? You bet!

Here's an example of VATEP(LP) employed one step to the right of LPTA on the best value continuum. Let's say as the team creating the source selection plan for an upcoming acquisition that you note that contractor's past performance is an important indicator of successful contract execution and makes it worth paying extra. Conversely, for all other criteria, you don't see a need to pay for anything over what is technically acceptable. If you were to choose LPTA, past performance could be considered, but only as "acceptable" or "unacceptable." Using VATEP(LP), your team could decide to lower the evaluated price by 3 percent for offerors whose past performance is evaluated to be either "relevant" or "very relevant" and "substantial confidence." Also, anything below "neutral confidence" would be considered technically unacceptable.

Once the evaluation team makes this determination, the offeror's price would be lowered (for evaluation purposes only) by 3 percent. For example, Offeror A's bid is \$50 million, and its past performance is evaluated as "relevant" and "satisfactory confidence." Offeror B's bid is \$51 million and its past performance is evaluated as "relevant" and "substantial confidence." Offeror C's bid is \$45 million and its past performance is evaluated as "relevant" and of "limited confidence." Assuming all other technical factors were evaluated as acceptable, Offeror A's evaluated price would remain at \$50 million. Offeror B's evaluated price would be lowered by 3 percent to \$49.47 million. Offeror C would be rejected as not meeting the acceptable criteria for past performance. Therefore, Offeror B would be awarded the contract for \$51 million. Simple, right? But in some cases, added complexity might be needed for the government to get "best value."



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This following example takes a greater step toward trade-off process; however, by using only objective criteria, remains a VATEP(LP) source selection. Let's say that this time your team is conducting a source selection to develop a support vehicle with well-understood performance aspects for which the user community is not willing to pay extra beyond minimally acceptable levels as established by seven separate technical criteria.

However, looking at long-term operating costs, the users are willing to invest in enhanced reliability and maintainability, as well as fuel efficiency. Based on user inputs and life-cycle cost estimates, your team determines that it is willing to lower (for evaluation purposes only) the bid price by \$5 million for reliability (as determined by evaluated Mean Miles Between Operational Failure [MMBOF] of greater than 10,000 miles. Less than 7,000 miles is considered unacceptable.); \$3 million for maintainability (as determined by evaluated Mean Time To Repair [MTTR] of less than 2.5 hours. Greater than 3 hours is considered unacceptable.); and \$3 million or \$1.5 million for fuel efficiency (as determined by an evaluated efficiency of 25 miles per gallon [mpg] or above, or more than 22 mpg and less than 25 mpg, respectfully. Less than 18 mpg is considered unacceptable.) However, the user has also decided on an affordability cap of \$100 million—i.e., that's all that they are willing to pay for that support vehicle capability. Table 1 is a tabular representation of how such a Source Selection Evaluation Board (SSEB) evaluation might result.

Is the VATEP(LP) source-selection process as simply as LPTA? No. Deciding upon which performance criteria to objectify and creating the appropriate decrement for the pricing evaluation will bring you into relatively uncharted territory. However, its inherent objectivity and ultimately lowest technically-evaluated price determination retains many of the features that make the LPTA source-selection process attractive. Will this

Deciding upon which performance criteria to objectify and creating the appropriate decrement for the pricing evaluation will bring you into relatively uncharted territory.



satisfy the defense industry's concerns of maximizing innovation? Probably not, but perhaps it can lower some of the walls that have recently been built. It does demonstrate that, when appropriate, there are certain non-cost criteria for which the government is willing to pay extra.

As with all of our complex acquisition business, a recipe book just doesn't exist. Each source-selection process decision must be based on its own merits. How well defined are the requirements? How mature is the technology? Are the risks well understood? VATEP(LP) simply affords the acquisition community one more approach worth considering. &

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Table 1: Support Vehicle VATEP(LP) SSEB Evaluation

Support Vehicle VATEP(LP) Evaluation	Bid Price (\$M)	Reliability	EP** Impact (\$M)	Maintainability	EP** Impact (\$M)	Fuel Efficiency	EP** Impact (\$M)	TC* 1 thru 7	Total EP (\$M)	Offeror Rating
Offeror A	\$94	8,150 miles	\$0	2.4 hours	-\$3	20 mph	\$0.0	Acceptable	\$91.0	1
Offeror B	\$90	7,400 miles	\$0	2.9 hours	\$0	23 mph	-\$1.5	Unacceptable	\$88.5	Unawardable
Offeror C	\$95	7,060 miles	\$0	2.7 hours	\$0	26 mph	-\$3.0	Acceptable	\$92.0	3
Offeror D	\$98	10,200 miles	-\$5	2.6 hours	\$0	24 mph	-\$1.5	Acceptable	\$91.5	2
Offeror E	\$95	9,500 miles	\$0	2.1 hours	-\$3	21 mph	\$0.0	Acceptable	\$92.0	3

* Technical Criteria (TC)

** Evaluated Price (EP)

Contract awarded to "Offeror A" based on lowest evaluated price of \$91M [\$91 million] at an award price of \$94M

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Documentation, Evaluation and Selection Pitfalls

GAO Rulings on Contract Bid Protests in Fiscal 2017

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Editor's Note: The author's examination of the GAO rulings for 2016 was published in the January-February 2018 issue of Defense AT&L (Pages 38-43).

The Government Accountability Office (GAO) issued its bid protest annual report to Congress for Fiscal Year (FY) 2017 in November 2017. This year's annual report records certain flaws in the government's evaluation process that tend to reappear from year to year.

Practitioners can learn from the scenarios presented in the cases cited by GAO in its report so that protests may be minimized by being aware of what constitutes a reasonable technical, past performance, cost or price evaluation and what does not. Asking questions to determine whether the prospective awardee's proposal meets all the material terms of the solicitation; focusing on the past performance information that will reasonably predict the offeror's performance and using price and cost realism correctly are a few of these lessons.

Another lesson from the rulings is the need to ensure that an agency's analysis provides support for its award decision and to whom it makes its contract award. The rationale for an award should be documented. Documentation seems to be a recurring concern of GAO as is the contemporaneous record maintained by agencies when awards are made. Following this year's guidance set forth by GAO may not guarantee

fewer protests but it will help government contracting officers adequately defend their agencies' award decisions.

The report highlighted cases that represented the most prevalent grounds for sustaining protests. They included:

- Unreasonable technical evaluation
- Unreasonable past performance evaluation
- Unreasonable cost or price evaluation
- Inadequate documentation of the record
- Flawed selection decision

The most frequently cited reasons for sustaining protests have not changed much from FY 2016, except that inadequate documentation of the record is back on the list. The GAO did sustain fewer protests overall in FY 2017 than in FY 2016 (17 percent compared to 23 percent). Alternative dispute resolution was also more successful in FY 2017 than in FY 2016 (90 percent compared to 84 percent). GAO also provided examples for each most prevalent ground on which it sustained protests, providing great insights for practitioners.

■ Unreasonable Technical Evaluation

GAO provided CR/ZWS LLC, (B-414766, B-414766.2, 2017 CPD ¶ 288) as an example of an unreasonable technical evaluation by the government. CR/ZWS LLC protested the award to PBP Management Group, LLC for commercial solid waste management services. The government considered three evaluation factors in its decision to whom it would award the contract: technical, past performance and price. Technical and past performance, when combined, were significantly more important than price. The government received five proposals and determined all to be technically compliant. The protestor successfully argued that the awardee's proposal should not have been determined technically compliant because it failed to comply with the material technical requirement.

Material Technical Requirement

The only issue of technical compliance was whether the mission-essential contractor services plan provided by an offeror met the essential contractor services requirements of Defense Federal Acquisition Regulation Supplement (DFARS) 252.237-7024. Essential contractor services are those services that the contractor must continue performing during periods of crisis. Awardee's plan, which was shorter than two full pages, failed to address key portions of the clause. For instance, the steps necessary to minimize the time lapse in replacing employees was not addressed in the plan. The awardee also failed to address efforts it would take to ensure that its employees would be trained and prepared to adjust performance as necessary during a crisis.

GAO found that the government did not identify any language in the awardee's plan that described the awardee's efforts to train or prepare personnel in the face of a crisis. The government argued that the awardee's plan satisfied the training requirement of DFARS 252.237-7024 because awardee

referenced a provision in its plan that discusses possible government-initiated training. GAO rejected this argument stating that the requirement to participate in government-initiated training is entirely distinct from the requirement of a contractor to submit a plan addressing its own efforts to ensure its employees would be trained and prepared to adjust performance during a crisis. As a result, the protest was sustained.

The protestor submitted two additional grounds for protest which were unsuccessful. These other two grounds were: (1) Awardee's proposal failed to comply with the applicable limitation on subcontracting requirement and (2) the government failed to conduct an appropriate trade-off analysis because it did not consider discriminators and applied an improper maximum acceptable price premium.

Limitation on Subcontracting

The protestor argued that awardee's use of a major subcontractor called into question whether it would comply with the limitations on subcontracting clause of the contract. This clause requires an awardee's employees to perform at least 50 percent of the cost of contract performance. GAO does not usually review issues concerning subcontracting limitations as they are generally matters of contract administration; however, GAO did hear the issue in this case since the limitation on subcontracting was considered a material term. GAO determined that compliance with the limitations on subcontracting clause is presumed since the plain language of the clause provides that submission of an offer is sufficient to demonstrate agreement to be bound to the terms of the clause. If the offeror's proposal directly negated the plain language in the clause, then the result would be different. That was not the case as there was no language in the awardee's proposal indicating that it took exception to anything in the limitations on subcontracting clause.

Trade-off Analysis

The protestor argued that the evaluation criteria required discriminators between the technical proposals. The protestor surmised that if there were discriminators, the government agency would have realized that the protestor would have provided the best value. GAO accepted the government's argument that the solicitation did not require the source selection authority (SSA) to consider varying degrees of technical acceptability or discriminators. In making its finding, the GAO referred to the plain reading of the solicitation and the fact that it informed offerors that technical proposals would be evaluated and rated simply as acceptable or unacceptable; the solicitation did not provide for degrees of acceptability.

The protestor also alleged that the SSA relied on an arbitrary maximum acceptable price when selecting awardee's lower-priced proposal for award and did not exercise independent judgment in making the selection. The SSA decision document was not clear on the issues so GAO requested more information. After receiving the information from the SSA, the GAO determined that the price assessment was not arbitrary, but



The takeaway was that the SSA can seek advice in making an award decision so long as the SSA's actual award decision is made independently.

rather was a percentage that represented the “maximum reasonable price trade-off.” The GAO found reasonable the SSA’s judgment that the 14 percent difference between awardee’s and protestor’s prices was significant. The SSA’s finding that the differences in past performance was slight also was ruled reasonable. The SSA decision was considered independent even though the SSA consulted with the Past Performance Evaluation Team to get its recommendation on an acceptable price. The takeaway was that the SSA can seek advice in making an award decision so long as the SSA’s actual award decision is made independently.

■ Unreasonable Past Performance Evaluation

The case of MLU Servs., Inc., (B-414555.3, B-414553.6, 2017 CPD ¶ 225) illustrates an unreasonable past performance evaluation, another prevalent ground for sustaining protests. MLU Services, Inc., protested the government contract award to Timberline LLC for maintaining and deactivating manufactured housing units. The procurement was a Stafford Act set-aside, which requires the offeror to reside or primarily conduct business within the disaster-affected areas. The relevant disaster areas were identified in the solicitation. The solicitation also provided that the award would be made on a best-value basis considering price and nonprice factors.

The nonprice factors were technical approach, company experience, and past performance. The nonprice factors were of equal importance and, when combined, were more important than price. The past performance factor required offerors to answer and submit at least three past performance questionnaires that would support the information provided by the offeror under the company experience factor. The offeror was allowed to submit past performance questionnaires for subcontractors. The past performance information was to be evaluated by the government to assess the offeror’s performance on recent and relevant work performed. The government also would consider the past performance experience of subcontractors and/or partners proposed for a major role in performance, as well as information obtained through reference checks, the government agency’s own knowledge and experience, and from any other source.

The protestor argued that the awardee did not meet the requirements of the Stafford Act and was, therefore, not eligible for the award. The protestor also alleged that an

unreasonable past performance evaluation was conducted on the awardee. GAO rejected the protest on the Stafford Act issue but sustained the protest on the basis of a flawed past performance evaluation.

Stafford Act Set-Aside

The requirements to be an eligible offeror under the Stafford Act were provided in the solicitation. In order to be eligible for award, the offeror had to reside or primarily do business in one of the identified disaster affected areas covered in the solicitation for 12 months prior to the solicitation. The protestor alleged that Timberline did not meet this requirement. The contracting officer conducted a reasonable compliance review of awardee’s business location by checking awardee’s SAM.gov registration (the System for Award Management (SAM) consolidated a number of different systems that held contractor data. SAM is partly used by the government to obtain information on contractors wishing to do business with it. Contractors now can register their companies and file representations and certifications in this one system rather than a number of different systems.) GAO determined that using SAM was reasonable. GAO was able to resolve the issue quickly in part because the government agency kept adequate documentation supporting its decision. The agency also was proactive in pursuing additional information to support its finding.

For instance, the protestor argued that awardee had an affiliated firm and that both firm’s receipts, locations and employees should be considered to determine qualification under the Stafford Act. GAO rejected this argument and determined that the awardee is reviewed for compliance, not the affiliated entity. The protestor also argued that the limitation on subcontracting was relevant to determine Stafford qualification. The protestor argued that the awardee was required to demonstrate in its teaming agreement that it would perform at least 50 percent of the work. GAO clarified that the limitation on subcontracting clause pertains to an agency’s determination of a firm’s status for the purposes of a small business set-aside, not determining qualification under the Stafford Act. GAO also cited previous decisions that were similar to CR/ZWS LLC (cited above for unreasonable technical evaluation) where it found that compliance with the limitations of subcontract clause are presumed unless specifically negated by language in an offeror’s proposal.

Past Performance

The protestor failed on its Stafford Act claim but was successful in arguing that the government improperly evaluated the awardee's past performance. The protestor argued that the awardee failed to provide the required number of valid past performance questionnaires and that one reference provided was incorrectly considered by the government as relevant past performance. GAO agreed with the protestor's position that the government's consideration of the reference was erroneous. GAO's guidance on this point was that the key to considering experience is whether it can predict the offeror's performance. The GAO found that the government incorrectly relied on the past performance questionnaires since the information was not "reasonably predictive" of performance. GAO sustained the protest since the award might have been in the protestor's favor if the government properly evaluated the past performance. A reader can reasonably conclude that GAO will decide in favor of a protestor if there is any doubt about whether an evaluation has been conducted properly.

■ Unreasonable Cost or Price Evaluation

GAO's NCI Info. Sys., Inc., (B-412870.2, 2016 CPD ¶ 310) decision serves as an example of the government being found conducting an unreasonable cost or price evaluation. As an aside, this case is also useful for guidance on how to handle organizational conflicts of interest. In this case, NCI Information Systems, Inc., was the incumbent contractor who protested when the government agency made award for the follow-on information technology services contract to HP Enterprise Services, LLC. According to the solicitation, award was to be determined using best-value after considering technical, past performance and price factors.

The government's technical evaluation rated the protester as "excellent" and the awardee as "satisfactory." Awardee's lower rating was due to its less than excellent management approach, which appeared to propose an insufficient number of hours to satisfy the requirements. Awardee also proposed sharing a large number of resources with other contracts. The technical evaluation panel (TEP) reviewed awardee's final proposal and concluded that it was unable to correct its significant weaknesses before the contract was awarded. The TEP also determined there was great risk involved in the awardee's staffing plan. Awardee rated higher than the protestor in the past performance factor; however, the technical factor was more important than the past performance. Technical and past performance combined were more important than price.

The contracting officer sought input from the TEP for the price factor. The contracting officer was concerned that awardee's prices, which equated to 52 percent of an already reduced independent government cost estimate (IGCE), were so low that the requirements would not be satisfied. A price realism analysis found that, even though awardee's proposed price presented a degree of risk, it was consistent with the technical approach. The government also found that the labor category pricing was realistic. In sum, the government determined that

it could not find awardee's price unrealistic given the circumstances, and that the contractor bore a majority of the risk because it was a firm fixed-price contract.

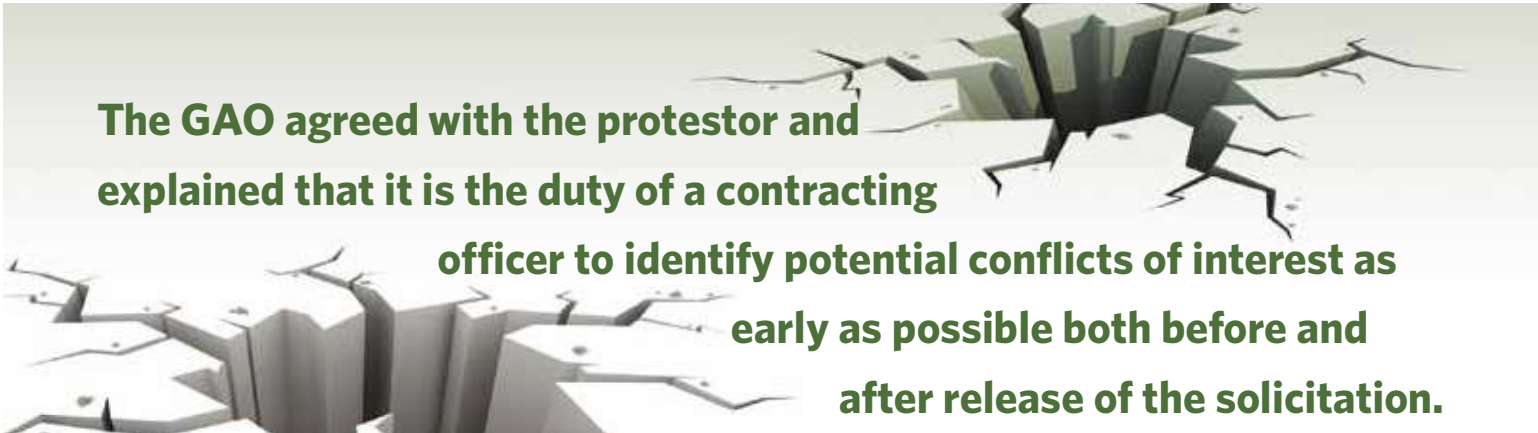
The contracting officer compared the proposed level of effort with the IGCE and concluded that staffing changes could correct any performance problems. The government's logic was that since the contract was task driven, awardee would have to make changes to accomplish the tasks at no additional cost to the government. The contracting officer was aware that awardee would likely incur more turnover and that it would experience more difficulty obtaining security clearances than would the incumbent protestor. Ultimately, the trade-off analysis by the government examined the less-than-excellent management approach proposed by the awardee as compared with the protestor's higher proposed price. The contracting officer determined that the protestor's price premium of over \$40,000 was not worth the reduced risk that the protestor offered in its proposal.

Price Realism

The protestor argued that the price realism analysis by the contracting officer was unreasonable in ignoring the concerns raised by the TEP that the prices and hours were so low that awardee could not satisfactorily perform the work. The government agency was not required to perform a price realism analysis, but, because one was conducted, it had to be reasonable. GAO found that there were different analyses by the government and that none of them logically supported the government's conclusion that the awardee's proposed price was commensurate with the proposed technical approach and reflected realistic labor category pricing. In particular, the GAO determined that there was no insight into whether awardee's proposed approach could be performed at the low price proposed or whether the low price was a sign awardee did not understand the requirements.

Organizational Conflict of Interest

GAO did not cite this case for its organizational conflict of interest issues (OCIs). However, it does provide a good example of how not to handle an OCI. The contracting officer knew before the solicitation was issued that there was a significant potential conflict of interest for at least six of the required tasks. These conflicts were identified as situations where the contractor would assist the government with preparing specifications for new or improved systems and then would furnish the system. The government agency established a general mitigation plan in an attempt to curtail the potential conflicts. This mitigation plan ultimately resulted in a provision being added to the solicitation that required the contractor to present all possible alternatives whenever the government requested the contractor to prepare or assist with any technical specifications or system recommendations. This requirement was designed to allow the government to make what it considered an "unbiased and objective decision." The provision also required the contractor to notify the government of any potential OCIs.



The GAO agreed with the protestor and explained that it is the duty of a contracting officer to identify potential conflicts of interest as early as possible both before and after release of the solicitation.

Awardee's proposal contained an OCI disclosure statement indicating its company was separating into two new, publicly traded companies. One of awardee's companies would deal with the enterprise technology infrastructure, software and services businesses. The other company would deal with printing and personal systems. Awardee provided a mitigation plan that stated there were no known potential (or actual) or any foreseen OCIs involving its current work. The mitigation plan also indicated that awardee would identify and mitigate any OCIs at the task order level. Awardee's primary objective was to handle OCIs by creating an "organizational firewall" between the government entity and any outside entities.

The protestor argued that there was an unmitigated impaired objectivity OCI because awardee's parent company manufactured and supplied much of the existing information technology that the government agency needed to maintain. In its argument before the GAO, the protestor focused on the relationship between awardee and its parent company. The protestor asserted that the relationship created a conflict of interest that was not only obvious but would prevent awardee from performing objectively and impartially.

The government argued that it anticipated a potential conflict of interest and that was why it implemented the mitigation strategy. The government didn't think that awardee's proposal might pose an OCI, preventing it from receiving award. The protestor's position was that the OCI mitigation plan was so generic and nonspecific to the issues that it did not mitigate the OCI. The GAO agreed with the protestor and explained that it is the duty of a contracting officer to identify potential conflicts of interest as early as possible both before and after release of the solicitation. It is also a contracting officer's responsibility to recommend steps in resolving the conflict(s), particularly prior to the release of the solicitation. If the contracting officer determines that there is a conflict that cannot be resolved or mitigated then the contracting officer must notify the offeror and allow it to address the conflict and withhold award if the contracting officer concludes the conflict cannot be resolved; or request a waiver for the conflict.

In this instance, the GAO found that the government did not adequately document the record. As a result, GAO was unable to determine whether the contracting officer meaningfully considered awardee's disclosed OCI. Additionally, GAO determined that awardee's proposed firewall would not have

resolved the potential impaired objectivity issue. The GAO cited precedent that a firewall arrangement is virtually irrelevant to an OCI involving potentially impaired objectivity because of the contractor's inability to render impartial advice to the government due to the contractor's competing interests.

■ Inadequate Documentation of the Record

We have already seen examples of inadequate documentation in the cases above. However, GAO provided the decision of Threat Mgmt. Grp., LLC, (B-413729, 2017 CPD ¶ 9) as a specific example of inadequate documentation of the record. Threat Management Group, LLC protested the issuance of a task order to R3 Strategic Support Group, Inc., for explosive ordinance disposal support services. The protester argued that the work was out of scope of the Indefinite-Delivery/Indefinite-Quantity (IDIQ) task order contract and that it violated the Competition in Contracting Act of 1984 (CICA) because it did not provide for full and open competition.

The IDIQ base contract was for support services. The protestor had a different 4-month contract for contingency training services at Tyndall Air Force Base that was performed by its 13 employees. The Contracting Officer Representative (COR) for the IDIQ support services contract requested that the contracting office add training services to the support services contract's Performance Work Statement (PWS). The contracting officer complied with the request, in the belief that those training services were included in the scope of the support services contract. An order was added to awardee's support service contract for 13 full-time equivalents to perform services at Tyndall Air Force Base. At that point, it appeared that the government was utilizing the IDIQ support services contract as a follow-on contract to the protestor's 4-month contract.

The protestor alleged that the task order was outside the scope of awardee's IDIQ support services contract. The protestor filed the protest after representatives from awardee visited the work site, rounded up protestor's employees and informed them that the work they were supporting was moving to awardee, that the task order was already awarded, and that they would reach out to protestor to invite job applications and discuss salary options for those who wanted to keep their jobs. Protestor first raised its objections to the agency. The government denied the agency level protest, stating that the task order did not have its own PWS and that it was the base contract PWS that governed.

The protestor then brought its case to GAO since it has jurisdiction to hear protests concerning task orders at any value when the task order increases the scope, period, or maximum value of the contract, particularly where a violation of CICA is concerned. The GAO has consistently ruled that it is a violation of CICA when work awarded in a task or delivery order is outside of the scope of the original contract.

To determine scope the GAO looks to the original bargain, the contract at the time of its original award, and asks whether the new work to be awarded was contemplated in making the original bargain. Any work would be considered outside the scope of the contract if it was not contemplated at the time of the original bargain. GAO also looks at the circumstances surrounding the procurement, any changes in the type of work, the performance period, and costs between the contract awarded and the cost as modified by the order. Finally, GAO looks to the contract solicitation of the original contract to see if it adequately advised offerors of the potential for the additional work.

GAO found that in this case the work of the 13 full-time equivalents (FTEs) was not originally contemplated when the base IDIQ support services contract was awarded. There were contradictions in the government's rationale for giving the awardee the work rather than having it contracted competitively. For instance, the government argued that the award was a cost-saving measure, but the cost-per-worker increased by 68 percent when it was given to awardee.

What was most compelling was the lack of documentation that would allow GAO to determine the specific services that the awardee was to perform under the task order. GAO was required to review two progress reports in order to determine what services the awardee was tasked to provide and whether those services were within scope. The progress reports showed that the awardee provided different types of training. The name of some of that training led GAO to determine that the work was not included in the original bargain (base contract).

The government might have been able to prove that the task order work came within the scope of the contract if it could have produced training documents. Unfortunately, the government did not provide any documentation explaining how it calculated that it needed 13 FTEs, how it priced the task order, what tasks would be performed, and what personnel skills were required.

Aside from the lack of documentation, the government's training manager's statements were inconsistent with the record. For instance, the training manager indicated around the time of the task order award that 13 FTEs would be required based on historical data, but during the protest indicated that the decision to use 13 FTEs was based on making full use of available funding. The training manager also claimed no knowledge of training materials, which was inconsistent with the assertion

that the awardee-provided training was within the scope of the PWS. GAO determined that the procurement record was so poorly documented that it could not conclude whether the work awarded in the task order was within the scope of the base IDIQ contract. Therefore, GAO sustained the protest, finding that the protestor could have been in line for award of the requirement if it were competed.

■ Flawed Selection Decision

Flawed selection decision was cited by GAO as the last most prevalent ground for sustainment of protests. GAO's example was CALNET, Inc., (B-413386.2, B-413386.3, 2016 CPD ¶ 318). In CALNET, the protestor was a small business protesting the award of a cost-plus-fixed-fee task order under a multiple award indefinite-delivery, indefinite-quantity contract to Universal Consulting Services, Inc., which was another small business.

The task order was for technical support services for a base year with four 1-year options. The solicitation stated that the noncost factors, organizational experience and past performance, were significantly more important than cost until the noncost factors between proposals became more equal. The solicitation informed offerors that a cost realism evaluation would be conducted to evaluate proposed costs and that offerors were required to provide their direct and indirect rates. The protestor, awardee, and two other offerors received the same adjectival rating. Despite receiving the same rating, the protester received a higher ranking than awardee. Yet, awardee received the contract because it had the lowest price out of the four equally rated offerors.

The protestor argued that the trade-off was unreasonable and the cost realism analysis was irrational and meaningless. GAO heard this case because it was a multiple award IDIQ task order contract that exceeded \$10 million. GAO otherwise does not typically invoke jurisdiction to hear multiple award IDIQ contract task or delivery orders. GAO agreed with the protestor on both of its grounds for protest.

Best-Value Trade-off

The protestor argued that the government acted unreasonably by concluding that the proposals submitted by awardee and the protestor were equal and by not critically analyzing the comparative merits of the proposals. GAO agreed and emphasized the importance that government agencies make intelligent award decisions using ratings as guides instead of relying on ratings exclusively to provide the result. The adjectival ratings given to awardee and the protestor erroneously indicated they were equal on their merits. GAO again stressed the importance of government agencies documenting their rationale for award decisions. In this case, the source selection decision did discuss the specific strengths and weaknesses that were identified and the rank order that followed but did not explain why the agency concluded the proposals were equivalent. GAO sustained the protest because the

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government did not explain why the offerors were rank ordered but then found equivalent.

Cost Realism Evaluation

The protestor argued that the awardee's direct labor rates were not properly evaluated and that a proper evaluation would have determined that the rates were unrealistically low and inadequate to attract and retain the necessary people to accomplish the requirement. As a result, finding the rates too low would have compelled the government to make an upward adjustment to the awardee's proposed price. This adjustment possibly would have raised awardee's price above the protestor's, and protestor as a result might have then been awarded the order. The GAO agreed and explained that it is important to consider each proposed cost in a cost realism analysis to determine whether that pricing reflects a clear understanding of the requirements. It also is important to determine whether the costs are consistent with any unique technical approach proposed.

In this case, there was no unique technical approach proposed. Instead, the solicitation established the exact labor mix and level of effort. Therefore, the only variation between the offerors was their rates. The government obtained information to evaluate the proposed rates by looking at identical labor categories from various contracts and documenting the fully burdened rates from those contracts. Most of the contracts used were fixed price. The government used the fully burdened rate data from the other contracts to establish a range for each of the 13 labor categories. The offerors' rates would be compared to the relevant labor category range and determined unrealistic only if the offered rate fell below the low end of the established range.

The protestor argued that using fixed price rates for comparison was unreasonable, particularly since none of the rates from those contracts were evaluated for realism. The protestor also argued that the performance locations of the comparison rates should have been considered since those rates were in lower-cost labor markets than the contract at issue. According to the protestor, the comparison rates created an artificially low threshold for determining the realism of the proposed rates. GAO agreed that the contracts used for the compari-

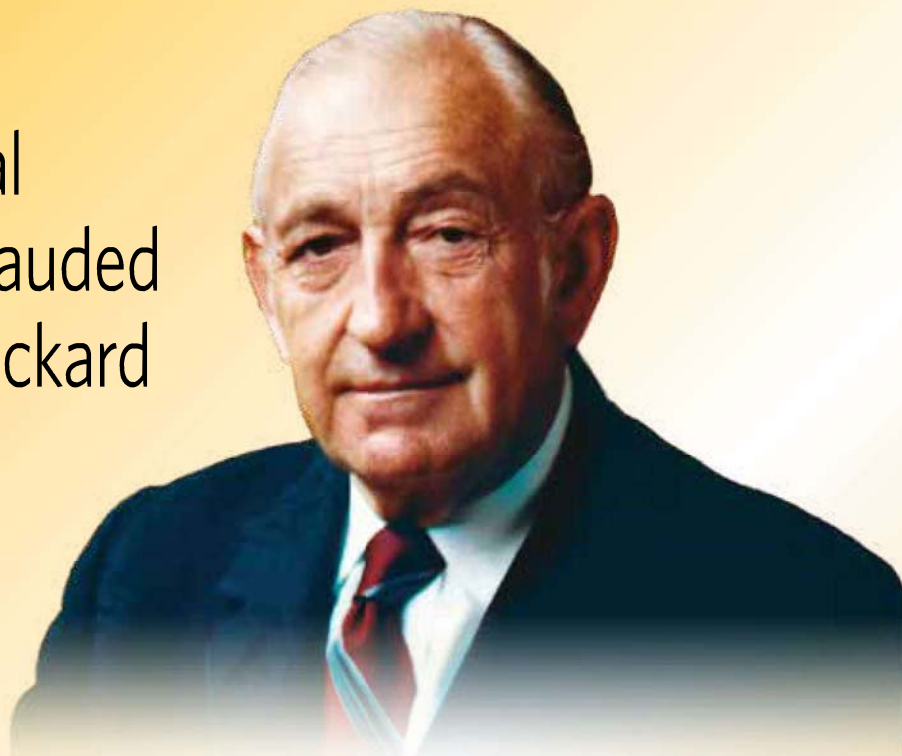
son rates were not comparable locations to the one in the task order. Aside from this, the GAO noted several concerns with how the government agency performed the cost realism part of the evaluation.

One concern involved the government analysis of the fully burdened comparison rates. Fully burdened rates include direct costs along with other elements (e.g., indirect costs). It was important that the government determine whether the direct rates were realistic since this was a cost reimbursement contract driven largely by labor costs. The importance stems from the policy consideration that compensation rates be realistic in order to attract and retain necessary personnel. The GAO found that the government could not justify its conclusion that the direct labor rates were realistic because it only analyzed the fully burdened rates and did not evaluate the direct labor rates independently of other costs making up the fully burdened rates. The GAO was independently unable to assess whether awardee's direct rates were realistic. The record included no data that would have allowed GAO or the agency to determine whether awardee's or protestor's direct labor rates were too high or too low.

GAO also agreed with the protestor that using comparisons from fixed-price contracts was improper because this was a cost reimbursable type of contract and using fixed-price contracts made it possible that the agency was using low- or below-cost comparison prices. There was no guarantee the comparison prices from the fixed-price contracts were realistic even if there had been a price realism conducted on the fully burdened rates. GAO's logic was that government agencies do not adjust proposed prices during a price realism evaluation; they use the results from a price realism evaluation to assess technical understanding or risk. Although the question was not directly at issue in this protest, the GAO was perplexed by the agency's choice of a cost-reimbursement type contract. The agency had fully defined requirements, specific labor categories, staffing, and the level of effort required. In these situations, it is common practice to use a fixed price type contract, not a cost reimbursement type contract. &

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Exceptional Contributions Lauded in Four 2017 Packard Awards



The 2017 winners of the premier Department of Defense (DoD) acquisition honor—the David Packard Excellence in Acquisition Award—made exceptional contributions in support of the National Defense Strategy, the Honorable Patrick M. Shanahan, Deputy Defense Secretary, said earlier this year.

At the Feb. 16, 2018, Pentagon ceremony honoring the four teams that received the award, Mr. Shanahan commended the teams for their hard work, innovation and creative ideas. He said that their efforts support performance, affordability and increasing lethality: “Your work embodies what we want to accomplish with the National Defense Strategy [NDS]. The type of work that the teams have done is exemplary of what the NDS is all about.”

The Honorable Ellen M. Lord, Under Secretary of Defense for Acquisition and Sustainment, said that the teams epitomized the best in acquisition: “We value acquisition because we are the people who need to take care of the taxpayers’ dollars. We have roughly \$1.9 trillion in programs of record over the next 10 years, so it is significant that we take care of those dollars and spend them well.”

A Brief History of the Award

The Packard Award is named for former Deputy Defense Secretary David Packard and recognizes organizations, groups and teams that have demonstrated exemplary innovation in the use of best acquisition practices that achieve acquisition excellence in DoD. It was first awarded in 1997.

Packard was co-founder and chairman of the Hewlett-Packard Company and chairman of the President’s Blue Ribbon Commission on Defense Management, chartered by President Ronald Reagan in 1985. He was deputy secretary of defense in the Nixon administration. Packard founded the Defense Systems Management College in 1971 and was a strong advocate of excellence in defense acquisition practices and a revolutionary founder in how the DoD acquires products.

Adapted from Lisa Ferdinando’s report for (DoD’s) Defense Media Activity.

2017 Packard Award Recipients

The Navy's Maritime Patrol and Reconnaissance Aircraft (MPRA) Program Office (PMA-290): For use of innovative contracting incentives and procurement approaches to manage its large and diverse portfolio of airborne platforms, including the P-8A Poseidon and P-3 Orion series antisubmarine aircraft and other special mission aircraft for the United States Navy and international customers and allies. The Navy office developed and implemented groundbreaking agreements and contracts with prime contractors and small businesses that lowered cost and delivered improved warfighting capability to the fleet between 30 and 40 days ahead of contract schedule,

while leading plans to assume lead capability integrator for future P-8A incremental upgrade programs. Specifically, the office procured 49 P-8A aircraft at unit costs almost \$60 million lower than earlier production average costs and identified cost-saving opportunities to acquire two additional aircraft under congressional authority to "buy to budget." In addition, the PMA-290 team quickly secured and fielded advanced airborne signals intelligence and classified special mission reconnaissance capability systems to support combatant commanders in theater and ensure the highest level of aircraft and mission readiness within the MPRA fleet.



Maritime Patrol and Reconnaissance Aircraft (MPRA) Program Office

From the left: Deputy Secretary of Defense Patrick M. Shanahan, Mr. Jack Vess; CAPT Charles Stickney, U.S. Navy (USN); CAPT Anthony (Tony) Rossi, USN; Ms. Holli Galletti; Under Secretary of Defense for Acquisition and Sustainment Ellen M. Lord; Mr. James McDermott; CAPT Molly Boron, USN; and Mr. James Gerber.



DCMA Special Programs Quick Closeout Team

From the left: Mr. Shanahan, Ms. Heidi Frazier, Ms. Irene Johnson, Ms. Cindy Ebenal, Mr. James Norris, Ms. Lord, Ms. Kathleen Miller, and Ms. Marie Greening

The Defense Contract Management Agency (DCMA) Special Programs Quick Closeout Team: For innovation and creativity in contract closeout. Previously, the rate of physically complete contracts coming due for closeout exceeded the number actually being closed, resulting in a 31.1 percent increase in overage (contract closeout backlog), further exacerbating the problem. The DCMA Team piloted new, quick closeout techniques that standardized risk factors and changed the paradigm in how contracts could be closed. There were 4,805 contracts for which quick closeout alone was used, and that made possible a 32.8 percent improvement in reducing overage in contracts, creating a positive closeout rate and reducing

the overage contract backlog. In achieving this, the DCMA Team reduced the industry and government's administrative burden and limited the DoD's exposure to certain financial risks. This ensured that unliquidated funds from completed contracts could be used before they could be canceled and returned to the U.S. Treasury. The team continued to innovate by expanding application to subcontractors, opening up an additional 10 percent of contracts to quick closeout. The team also deployed multiple initiatives to encourage the practice beyond DCMA and across the DoD, as well as other federal agencies, with potential significant improvements to the acquisition community at large in contract closeout records.

(DoD photos by U.S. Army Sgt. Amber I. Smith)

2017 Packard Award Recipients

The National Reconnaissance Office (NRO) Signals Intelligence Systems (SIGINT) Acquisition Directorate, Low Earth Orbit (LEO) System Program Office: For executing a successful campaign and launching the final Block 2 SIGINT LEO spacecraft in the face of significant obstacles. A catastrophe at the launch base and launch vehicle upper-stage problems resulted in a lengthy delay and put the health of the batteries at risk. This forced a rare spacecraft de-encapsulation to allow for battery reconditioning. Once this reconditioning was completed, the launch proceeded without a single fault or out-of-tolerance condition. During the same time as the launch

activity, the NRO SIGINT LEO team completed the critical resign review for Block 3, leveraging cutting-edge technology to meet evolving threats in a manner that focused on affordability. The team cut more than \$1 billion in recurring costs by distilling the mission needs to a core set and saving 57 percent of spacecraft requirements. The team's actions ensured that the newest addition to the NRO SIGINT LEO architecture will provide unmatched information to the intelligence community and the warfighter while affordably meeting the tough new intelligence challenges of the future.



National Reconnaissance Office's SIGINT Acquisition Directorate Low Earth Orbit System Program Office.
From the left: Mr. Shanahan; Col Mark Davis, U.S. Air Force (USAF); Ms. Tina Harrington; Mr. Mark Sardelli; CAPT Scott Josselyn, U.S. Navy; Ms. Lord; Mr. Steve Simone; Capt Blair Kirk, USAF; and Mr. Rich Ponder.



NGA Agile Web Presence Program Management Office

From the left: Mr. Shanahan, Ms. Whitney Blackman, Mr. Ryan Phillips, Mr. Bob Ballard, and Ms. Lord.

The National Geospatial-Intelligence Agency (NGA) Agile Web Presence Program Management Office (AWP PMO): For proactive approach and data-driven decision making efforts in addressing and satisfying external and internal user requirements within the intelligence community, DoD and NGA. The AWP PMO fundamentally changed how users access, search for, and discover geospatial intelligence through NGA's primary online Web presence—the globe. The AWP PMO took the NGA strategy to heart and made significant changes to the globe, allowing customers from across the National System for Geospatial Intelligence to discover content, expertise, and

services. Additionally, the AWP team used agile methodology to deploy software releases with minimal downtime or risk that consequently resulted in an increased capacity to integrate more than 10 data sources with more than 5 million products. This increased authoritative content creation, service, and catalogs, as well as advanced search functions with location, topic and event fields. Metrics collected showed these newest capabilities are driving more customers to the globe and enhancing their experience with faster access to the geospatial intelligence data and services, greatly enhancing intelligence-based decision making in support of the warfighter.

WRITERS' GUIDELINES IN BRIEF

Purpose

Defense AT&L is a bimonthly magazine published by DAU Press, Defense Acquisition University, for senior military personnel, civilians, defense contractors and defense industry professionals in program management and the acquisition, technology and logistics workforce.

Submission Procedures

Submit articles by e-mail to datl@dau.mil. Submissions must include each author's name, mailing address, office phone number, e-mail address, and brief biographical statement. Each must also be accompanied by a copyright release. For each article submitted, please include three to four keywords that can be used to facilitate Web and data base searches.

Receipt of your submission will be acknowledged in 5 working days. You will be notified of our publication decision in 2 to 3 weeks. All decisions are final.

Deadlines

Note: If the magazine fills up before the author deadline, submissions are considered for the following issue.

Issue	Author Deadline
January-February	1 October
March-April	1 December
May-June	1 February
July-August	1 April
September-October	1 June
November-December	1 August

Audience

Defense AT&L readers are mainly acquisition professionals serving in career positions covered by the Defense Acquisition Workforce Improvement Act (DAWIA) or industry equivalent.

Style

Defense AT&L prints feature stories focusing on real people and events. The magazine seeks articles that reflect author experiences in and thoughts about acquisition rather than pages of researched information. Articles should discuss the individual's experience with problems and solutions in acquisition, contracting, logistics, or program management, or with emerging trends.

The magazine does not print academic papers; fact sheets; technical papers; white papers; or articles with footnotes, endnotes, or references. Manuscripts meeting any of those criteria are more suitable for DAU's journal, *Defense Acquisition Research Journal (ARJ)*.

Defense AT&L does not reprint from other publications. Please do not submit manuscripts that have appeared elsewhere. *Defense AT&L* does not publish endorsements of products for sale.

Length

Articles should be 1,500-2,500 words.

Format

Send submissions via e-mail as Microsoft Word attachments.

Graphics

Do not embed photographs or charts in the manuscript. Digital files of photos or graphics should be sent as e-mail attachments. **Each figure or chart must be saved as a separate file in the original software format in which it was created.**

TIF or JPEG files must have a resolution of 300 pixels per inch; enhanced resolutions are not acceptable; and images downloaded from the Web are not of adequate quality for reproduction. Detailed tables and charts are not accepted for publication because they will be illegible when reduced to fit at most one-third of a magazine page.

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