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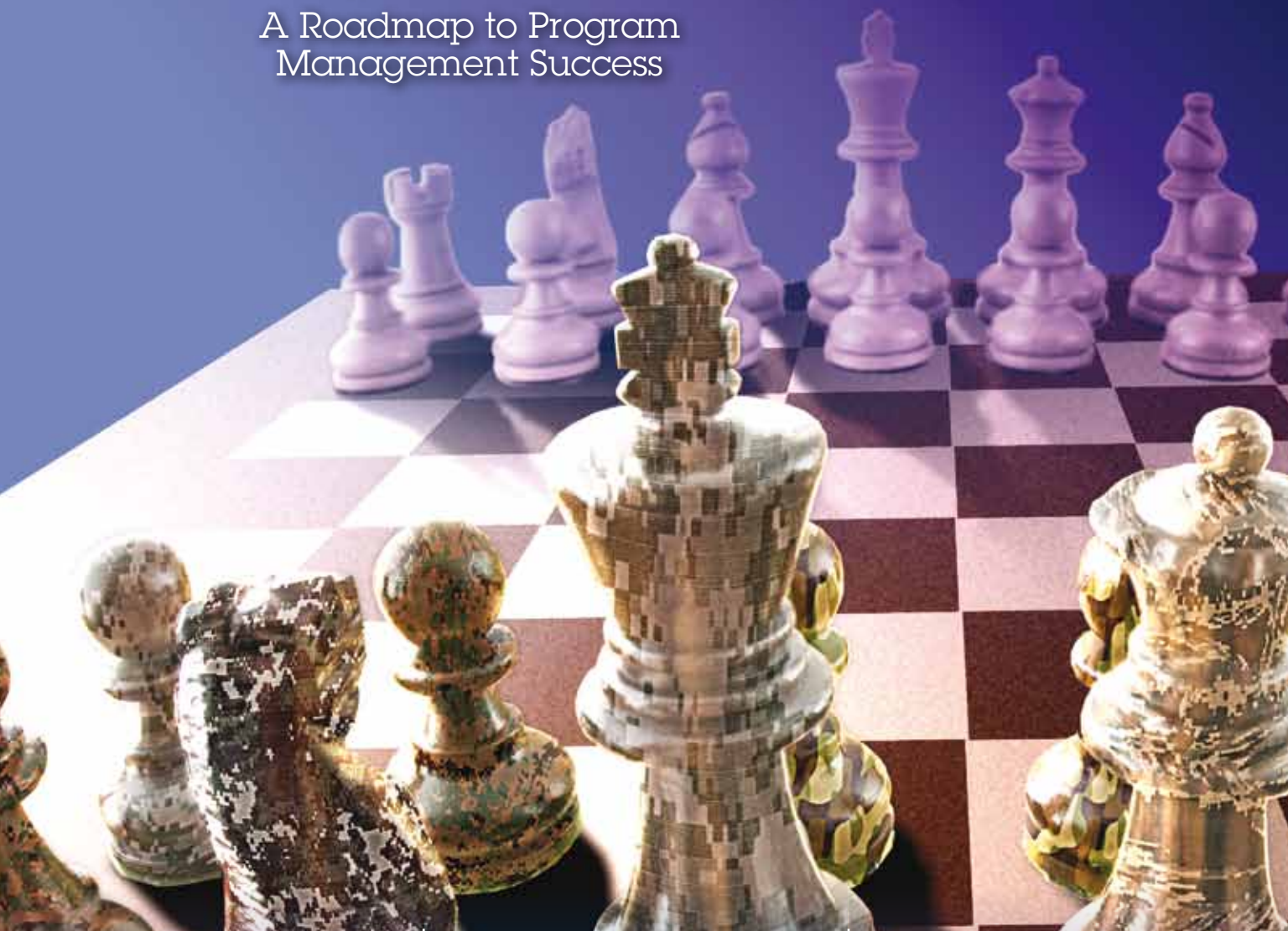
The Acquisition Strategy

A Roadmap to Program Management Success



The AoA
An Early Filter to Create an Affordable Program

Vertically Synchronizing Operational Contract Support

A Disruptive Game Changer to Achieve DoD Austerity

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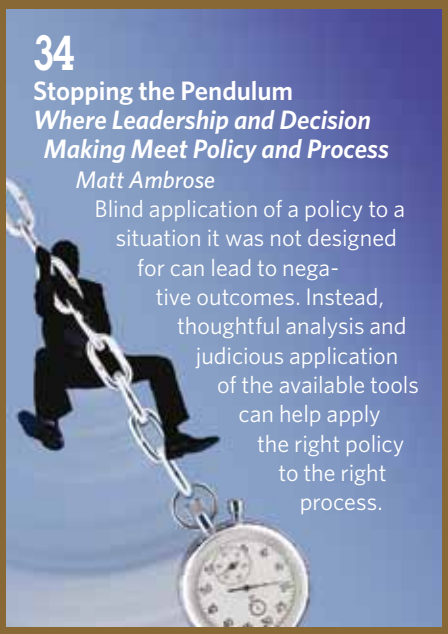

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The Acquisition Strategy

A Roadmap to Program Management Success

John Mueller

Obtaining major milestone approval challenges DoD program managers (PMs) to create programs that satisfy numerous stakeholders and address requests from multiple constituencies. Another feature of the DoD acquisition system is the requirement to create a mountain of documentation to "assist" the review process; current regulations require up to 60 documents (32 regulatory and 28 statutory) to pass a single milestone review! Each of these documents/constituencies seeks clarity on specific aspects of the program and zealously works to obtain the satisfaction of its unique concerns. Along the milestone pathway, it's easy for the PM to get overwhelmed by this blizzard of paperwork/requests and adopt a mindset of "I'll do whatever it takes to obtain your concurrence" to complete the milestone review checklist. After a while, conversations could begin to resemble those between Alice and the Cheshire Cat:

Mueller *is a professor of program management at DAU. He has 26 years of acquisition management experience in Air Force and Joint programs.*

"Would you tell me, please, which way I ought to go from here?" asked Alice. "That depends a good deal on where you want to get to," said the Cat. "I don't much care where—" said Alice. "Then it doesn't matter which way you go," said the Cat. "—so long as I get *somewhere*," Alice added as an explanation.
—Lewis Carroll, *Alice's Adventures in Wonderland*

But all is not lost. To assist the PM along this journey, there is one document that can keep a program focused, on target, and ready to achieve acquisition success. This powerful thought piece is known as the acquisition strategy (AS). While simple in concept, the AS concept requires time to develop, mature, and propagate. When done well, the AS not only enables a successful milestone review, but outlines the workforce motivations, identifies/mitigates risks and opportunities, and assists in obtaining the resources necessary to deliver effective capability to the warfighter. In short, the acquisition strategy is the PM's roadmap to success.

Acquisition Strategies as a Hot Topic

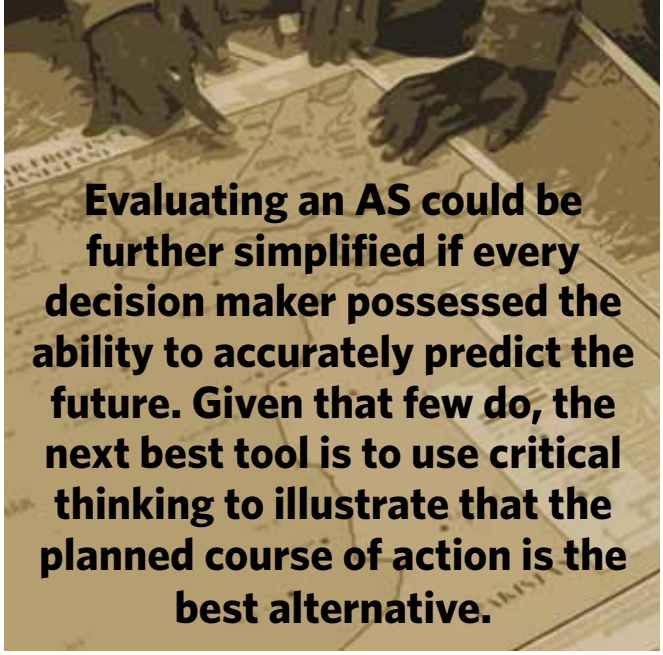
The recent AT&L guidance on program planning (*Document Streamlining—Program Strategies and Systems Engineering Plan*, April 20, 2011) implied that the size of many acquisition documents had grown to the point where the intent of the document was being lost in the sheer number of pages. This memorandum suggested limiting AS documents to 30 pages using a standard template. Even this limit is generous, considering the truly few real objectives for an acquisition strategy:

- Demonstrate that the likely outcome is worth the investment in both resources (real costs) and schedule (opportunity costs).
- Present a logical, reasonable proof of how the end item meets required performance objectives.
- Demonstrate that you have an effective business strategy and team in place to execute the program.

The proposed template is a great place to start, but its value lies in making the task of reviewing the AS easier; employing the template should not limit a PM's ability to provide creative solutions. Evaluating an AS could be further simplified if every decision maker possessed the ability to accurately predict the future. Given that few do, the next best tool is to use critical thinking to illustrate that the planned course of action is the best alternative.

It Takes a Team to Write an AS

No matter how well trained or experienced the PM is, it's unlikely that he or she has the depth and breadth of knowledge (or time) to complete an acquisition strategy alone. Successful PMs recognize that they succeed by taking on the role of coach versus being the star player. Their primary job is orchestrating the actions of their team. An objective of the AS is to provide a complete look at the total program, so the team makeup will likely be representative of the program as well.



Evaluating an AS could be further simplified if every decision maker possessed the ability to accurately predict the future. Given that few do, the next best tool is to use critical thinking to illustrate that the planned course of action is the best alternative.

Because the AS is the primary acquisition document, the roles and involvement of several team members in contributing to the AS are obvious; contracting, technical/engineering, budget personnel, testers, logisticians, and systems engineers, each having a major portion of the AS where they have the lead. These individuals not only participate in their areas of specialization, but assist in defining the total program management approach.

Additionally, there are areas of the AS where an outside specialist may be required to provide specific advice to the program. Outside experts can bring in the latest policy and best practices for sections on international involvement or industrial base capability. However, the most important of the outside experts is the operational representative. Operator involvement both recognizes the possibility of requirements exceeding resources and assists the PMs in making trades between different requirements. In the end, the operator, not the PM, is the judge as to whether trades are acceptable in the final product.

Sample AS Writing Team

Team Member	Tasking/Contributions
Budget Office	Cost estimate, resource requirements
Contracting Office	Contracting strategy, incentive strategy, market research, competition strategy
International	International cooperation, sales
Industrial Affairs	Industrial capacity concerns, industrial base impacts
Logistician	Support strategy, competition strategy
Product Engineer	Technical approach, risk assessment
Systems Engineer	Configuration control process, risk control
Test Office	Testing approach, test article requirements, range requirements
Operator	Requirements, CONOPS

Once a program team has been identified, the next step is to conduct a team kickoff session to ensure a common understanding of program requirements and CONOPS. PMs should never assume universal understanding of their intention just because it is clear to them. An early goal of the AS planning session is alignment of program requirements and traceability back to foundational documents. The plan should include periodic progress reviews to discuss changes in business and technical requirements and how they drive acquisition risks/opportunities.

A successful AS becomes a story about the program—its people, goals, and pathways. Like a good story, it needs to be centered on a common theme that holds it together. The best way to make this theme consistent is to recognize that while it takes a team to write the AS, in the end, the PM is the story teller; the better the AS tells the story, the easier it is understood.

Critical Thinking is at the Heart of the AS

Critical thinking is a skill most top leaders possess and use without recognizing its value. However, good critical thinking is key to creating a successful AS. From the Foundation for Critical Thinking, a well-cultivated critical thinker:

- Raises vital questions and problems, formulating them clearly and precisely
- Gathers and assesses relevant information, using abstract ideas to interpret it effectively
- Comes to well-reasoned conclusions and solutions, testing them against relevant criteria and standards
- Thinks open-mindedly within alternative systems of thought, recognizing and assessing, as need be, their assumptions, implications, and practical consequences
- Communicates effectively with others in figuring out solutions to complex problems.

A logical proof arrived at and supported by critical thinking naturally accounts for multiple stakeholder objectives and the resources available for the task. However, for the AS team the challenge is in the doing, not the wanting.

The first guideline for using critical thinking in your acquisition strategy is recognizing that inserting critical thinking at the end isn't an effective approach. Withholding questions and feedback until the end of the development process and then "peppering the team with bolts of brilliance" does not create an environment for acquisition success. Instead this often results in a disjointed approach—like a story with two beginnings and no end. To effectively use critical thinking, introduce it at the beginning of the process and constantly cultivate it throughout.

A second guideline for critical thinking is acknowledging that it is not an exclusive leadership tool. Critical thinking works best when universally practiced by the whole team, not just a select few. The initial key participant meeting sets the tone for the entire effort. As part of the kickoff, the PM should introduce his vision of the program—focusing on answering the three critical AS questions—and set the expectation of concluding with a well-supported conclusion using critical thinking. As a corollary, set a precedence of encouraging ideas to come forward and have their merits fairly discussed versus discouraging innovation or fostering favoritism and bias.

Finally, for critical thinking to succeed, leaders must be willing to listen to opinions and ideas that may differ from their own. The easiest way to stifle critical thinking is adopting a "shoot the messenger" mentality where introducing non-conforming or novel ideas have career-limiting overtones. While it may seem to be a waste of time to hear out ideas that are "far out there," challenging the conventional thinking can be a means of finding new alternatives or providing further evidence supporting the conventional approach.

Practices for Obtaining AS Success

A foundational tenet in every acquisition program is to "get the requirement right." This may require multiple consultations with operators to obtain clarifications and confirm your team's understanding of requirements. These clarifications define "what you are buying" as close as possible. Even the best acquisition strategy would not overcome chasing a poor requirements definition; therefore, it's not included as a practice for success. So in addition to getting the requirements right and encouraging the use of critical thinking as a general practice, there are a few best practices on AS writing that should be followed:

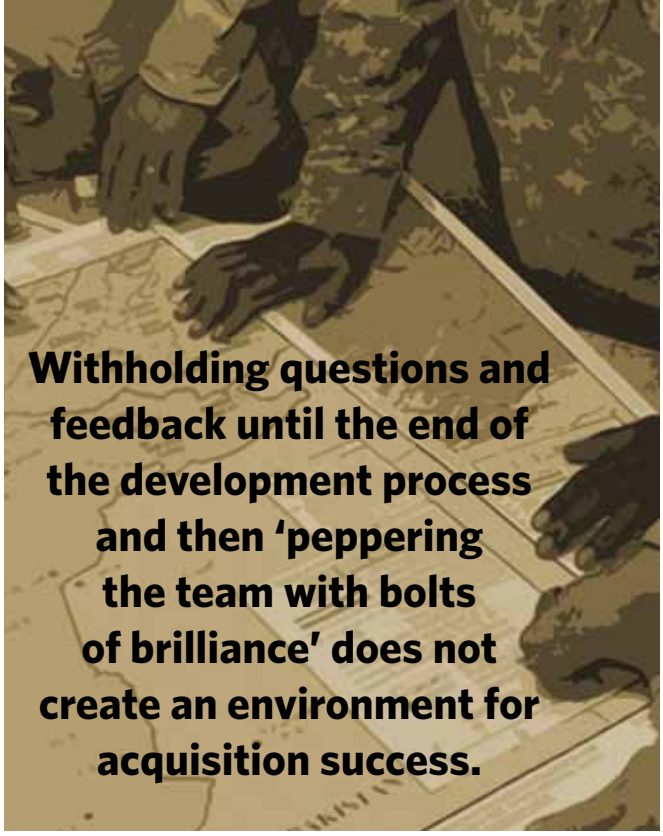
- **Rigorously and objectively consider risks.** The heart of the acquisition strategy is the identification, categorization, and mitigation of programmatic risks. The primary challenge for the PM is to review the risks objectively, not diminishing longstanding risks (due to familiarity with the issue or unsupported optimism) or exaggerating new, unfamiliar risks (because they are new). Risks can be technical or programmatic or a combination of both. Technical risk mitigations include studies, prototypes, or even second sources. Programmatic risk mitigations suggest negotiation of requirements, obtaining additional program support, or renegotiation of program events. Combination risks suggest using a combined mitigation approach. An acceptable mitigation strategy is achieved when probability/impact of occurrence reaches an acceptable level.

- **Incentivize what's important.** The proposed contract structure is a mandatory element of the AS, but the incentive structure is more critical. The structure of the contract defines the terms for payment, performance, and delivery—all key program elements—but the incentive structure informs the contractor what is important and where to focus. The incentive structure can emphasize performance, cost, or schedule but normally not all three. The rewards, punishments, or stretch goals are the part of

the acquisition story that is often cited as the most memorable to senior leaders.

- **Create progress metrics.** A final step in implementing an AS is having the ability to answer the question, "How will you know if you are getting what you want?" Metrics that provide insight into program events are the answer. Similar to incentives, metrics identify the program elements that are important enough to measure and track. An important aspect of your metrics is establishing expectations. Expectations need to be tight enough to allow for effective corrective action, but not so tight that every monthly report creates a crisis action team. Finally, be flexible to changing a metric when the behavior measured is not an indicator of program success or failure. An effective program development metric may not be effective in the sustainment phase.

A final best practice about the AS is to recognize while the document is most likely a composite from many contributions, the senior-leader expectation is that the PM must understand and be able to explain any of the positions taken in the AS. Remember, the PM is the spokesperson and storyteller for his/her program.



Potential Pitfalls

There are just as many ways of writing a bad document as there are writers. Here are some common errors to guard against:

- **"Just do it" attitude**—The "just do it" attitude sees the completion of the AS document as the end of the process. This approach ignores the premise that the AS is an enduring agreement with the milestone decision authority (MDA) and a recipe for program success. The likely result of a just-do-it attitude is that the AS is filed until the program becomes unsuccessful—via a schedule or cost breach—and then is taken out for a revision. At this point, the new PM often is left to wonder "what if" the original plan had been followed and why he/she is implementing a turnaround strategy.

- **Fluff**—Fluff is using large words that sound important or long sentences with little meaning or effect. Fluff can be caused by many actions, including excessive dependency on previous documents, heavy reliance on boilerplate text, or rice-bowl protection programs. Fighting fluff is a main responsibility of the PM to ensure the meaning of the document is not lost. Critical thinking and effective questioning are the enemies of fluff.

- **Treating the AS as just another required document**—Viewing the AS as just 1/60th of the required documents for the next milestone review ignores the true value of the AS to set the tone for your success. Symptoms of this approach are patterning your AS after another program's approved AS, using a cut-and-paste-first attitude and a total disregard for critical thinking. The importance of the AS must be set at the first meeting with the team and emphasized throughout the process.

- **Overconfidence**—Overconfidence is often evidenced in low risk scores and superficial mitigation approaches. This practice is frequently combined with a "we can do it" attitude, selectively ignoring any objective evidence which could indicate impending failure of the chosen approach. In the extreme, overconfidence allows the initiation of unexecutable program while keeping the MDA from that realization until after significant funds have been spent. Doing so not only hurts the program, but creates an opportunity cost for the Service when those funds could have gone to other priorities.

Final Word: The AS is the PM's Document

Frequently, the AS is labeled as the PM's contract with the MDA. This recognizes that an AS links performance expectations and resources. However, this analogy is not complete, as it ignores some other benefits of the AS. The AS also defines the operator's success criteria for the program and makes them a partner in delivering a necessary capability on a realistic timeline. It is also a vision within your organization for defining goals, objectives, schedules, and expectations; it should define what makes them come to work every day. Finally, it defines your intended agreement with industry and the commitment of each party to meet specific objectives.

Remember: The AS is not just an agreement to be filed away when signed, but a road map to success on your acquisition adventure.

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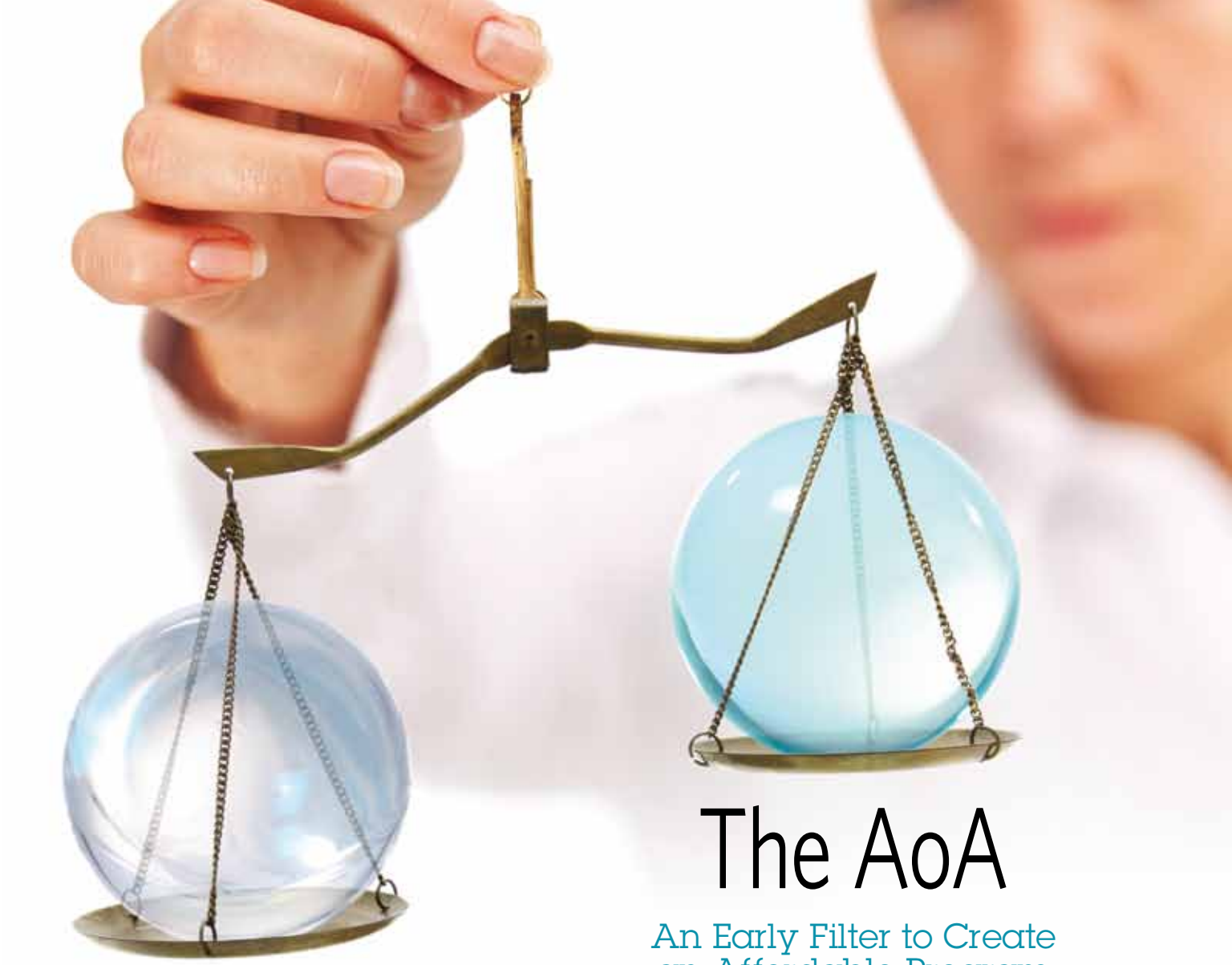

The AoA

An Early Filter to Create an Affordable Program

Mark Husband ■ *Keith Kaspersen*

An analysis of alternatives (AoA) has long been required for major defense acquisition programs (MDAPs) and major automated information system (MAIS) programs as a matter of DoD policy (DoDI 5000.02) and has recently become a requirement, as a result of the 2366 certification process and the Weapon Systems Acquisition Reform Act (WSARA) of 2009. While DoD has a long history of conducting AoAs prior to initiating major programs, the new statutory guidance on AoAs has increased AoAs' importance and emphasis. This is consistent with an intentional, concerted transition in the Department's acquisition culture to devoting more attention and planning to major programs earlier in the

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process (i.e., prior to milestone B). The statutory references to AoAs are brief and could be construed as inconsequential—merely codifying what had previously been required under DoD policy. However, the effects of the statutory guidance on AoAs have been more significant than a simple reading of the law might indicate.

Just as we shouldn't pull the trigger on a personal decision based on the advice of one vendor, the Department shouldn't engage in expensive technology development without considering various alternatives.

Why Do an AoA?

One answer is obvious: It is required for ACAT 1A and 1AM programs. However, the more salient reason, not only for MDAPs and MAIS programs, but also for smaller programs, is that an AoA positions the Department to pursue the most effective course to obtaining the capability. An AoA is simply a structured, unbiased framework for evaluating the most promising alternatives for a given need, comparing the merits and risks of each, and providing a recommended approach to decision makers. Clearly, it makes sense for large programs to devote considerable time and effort to an AoA prior to investing significant resources in a specific approach. But ideally, AoAs should be done for any DoD effort that has multiple alternatives, just as individuals perform an alternatives analysis when facing a major personal decision. Whether we realize it or not, most of us probably do a mini-AoA, at least in our minds, for personal decisions like selecting a university, choosing between job offers, or whether to buy a new or used car. Just as we shouldn't pull the trigger on a personal decision based on the advice of one vendor, the Department shouldn't engage in expensive technology development without considering various alternatives in a systematic fashion. Thought about this way, an AoA is a prerequisite to initiating a sound acquisition program.

Recent Statutory Guidance

For MAIS programs, the statutory guidance to conduct an AoA prior to program initiation is contained in Section 811 of the 2001 National Defense Authorization Act (NDAA). Subtitle III of title 40 of U.S. Code (also known as the Clinger-Cohen Act of 1996) also addresses the requirement to conduct an AoA and economic analysis for all information technology investments. For MDAPs, Section 2366b of title 10, U.S. Code, added by the NDAA of 2006, requires that the Milestone Decision Authority (MDA) certify to Congress that DoD has conducted an AoA prior to milestone B approval; in 2009, WSARA added a similar provision to Section 2366a of title 10 that requires an AoA be conducted prior to milestone A. WSARA also specifically directed that the director of Cost Assessment and Program Evaluation (DCAPE) "take the lead in the development of study guidance for an analysis of alternatives for each joint military requirement for which the chairman of the JROC is the validation authority." However, in addition to assigning responsibility for study guidance, WSARA further stipulated that the DCAPE "shall serve as the principal official within the senior management of DoD for the ... performance of such analyses." These few sentences in WSARA have had a significant impact on how AoAs are conducted in the Department.

CAPE's Expanded Role

Prior to WSARA, the director of program analysis & evaluation (PA&E), CAPE's predecessor organization, also was responsible for drafting study guidance for AoAs and for conducting sufficiency reviews documenting how well the AoA met that guidance. However, the guidance and review prepared by PA&E were provided to the USD(AT&L) as internal DoD documents; the director of PA&E did not have the authority or responsibility to reject an AoA or direct that it be redone. To be sure, the D, PA&E's advisory powers were significant; however, he was not the decision authority for AoAs. The elevation of the DCAPE to a Senate-confirmed position changed the dynamic by giving the DCAPE responsibility not just for formulating the study guidance, but also for the performance of the analysis. This responsibility no longer is just advisory, since the DCAPE can be called to testify before Congress on any matter within her portfolio. It naturally follows that CAPE senior officials and analysts now have a more active role throughout the AoA execution process, rather than just during formulation of the study guidance and again at the end of the process during the sufficiency review stage.

Prior to WSARA, there was no statutory guidance dictating how an AoA should be conducted or the *minimal content* it must contain. WSARA specifies that the DCAPE must ensure that the AoA study guidance requires both

- "Full consideration of possible trade-offs among cost, schedule, and performance objectives for each alternative considered" and
- "An assessment of whether or not the joint military requirement can be met in a manner that is consistent with the cost and schedule objectives recommended by the Joint Requirements Oversight Council."

Thus, at a minimum, CAPE is charged with assessing how well the AoA conducts tradeoffs between alternatives and whether those alternatives can be realized in accordance with cost and schedule objectives. Proper consideration of trad-

eoffs includes ensuring at least two things: (1) that a range of sufficiently different alternatives are examined and (2) that the alternatives themselves have been adequately evaluated. What determines whether an alternative has been adequately evaluated? No simple answer suffices for all situations, but a real example may be useful. If AoA results indicate that a subsystem specification—say gun caliber or engine power—is key to mission performance, the analysis would be less than adequate if only one of the alternatives considered included that minimal subsystem specification.

Consider Cost and Affordability Upfront

One outcome of greater emphasis on upfront planning has been an enhanced expectation that cost and affordability of potential DoD systems are considered earlier in the process, including much more intensively during requirements generation and at early major milestones, such as materiel development decision and milestone A. This is particularly evident in the Better Buying Power (BBP) Initiatives championed by Deputy Secretary Ashton Carter and Acting Under Secretary Frank Kendall, in which the first of the five Thrust Areas concern "Targeting Affordability and Controlling Cost Growth." In fact, the first initiative, "Mandating Affordability as a Requirement," stipulates that an affordability target be established at milestone A and not changed without the MDA's concurrence. This is a major change from the way the Department operated only a few years ago.

As a cost analyst in the OSD/CAIG in the mid-2000s, one of the authors (Husband) saw the shift in emphasis by DoD senior leaders to attaining earlier information about programs, including the desire for an independent cost estimate (ICE) at milestone A. This was seldom done at the time but became statutory with WSARA in 2009. I remember thinking it wasn't going to pay off; it seemed to me that senior leaders didn't have enough time to review MDAPs at milestones B and C, so how were they going to spend time on programs at milestone A and earlier? I was also skeptical about the value of the information available at the early stages. A cost estimate at milestone A is much more uncertain and challenging than one done at milestone B or C, because of the ill-defined nature of the program at such an early stage and the number of different solutions that must be costed. However, I believe DoD's culture has indeed shifted in recent years as a result of senior leadership's increased emphasis on upfront planning, and I also believe I was wrong about the lack of payoff. Three examples of senior leader engagement at milestone A or earlier are cited in Deputy Secretary Carter's Sept. 14, 2010 guidance memo (Ohio-class submarine, presidential helicopter, and ground combat vehicle). This senior-leader involvement has had a significant impact, resulting in more-affordable, less-risky acquisition strategies, based on more mature technologies, than originally envisioned.

Other examples of early scrutiny of affordability include portfolio reviews, such as those for conventional weapons, ground vehicles, unmanned aircraft, and ground-moving target indicator development. Such reviews are challenging because they require that better, higher-fidelity information be provided earlier—not just from cost estimators, but from all disciplines. However, if such reviews lead to a better understanding of the costs associated with capabilities identified in our requirements documents, the Department will benefit from the time spent producing better information earlier in the process.

This enhanced emphasis on affordability is also evidenced in discussions that occur in Functional Capability Board and Joint Capability Board meetings prior to Joint Requirements Oversight Council reviews. Senior leaders now expect the Services to be able to articulate how and why their recommended alternative is affordable, especially when the recommended option has a higher life cycle cost than lower-performing alternatives. It is no longer satisfactory to assert that a system is affordable simply because the Service is willing to fully fund it; decisionmakers want to see and understand the analysis comparing the effectiveness and costs of the alternatives before they approve a given approach. This is the primary purpose of an AoA—to fully evaluate and fairly compare the effectiveness and cost of all the viable alternatives.

Prior to WSARA, a criticism often heard about the DoD's AoA process was that the Service had already selected its preferred alternative prior to the AoA and, as a result, the AoA was just a rubber-stamp document to "fill-the-square" and move forward with the acquisition process. A corollary criticism was that the AoA was often "outsourced"—i.e., conducted by an organization outside the Service, and as a result, the Service wasn't involved enough in the execution of the AoA. So, a measure of improvement for AoAs conducted under the new, WSARA-mandated process is how well they compare the effectiveness and affordability of the options. AoAs that do that and that also effectively defend the case for the recommended alternative will be valued by DoD decisionmakers and, most importantly, will provide a strong foundation for a successful acquisition program.

Improving Interaction During AoA Execution

Since WSARA passed in 2009, only a few AoAs have been through the complete process, from promulgation of study guidance to AoA out-brief. There is no DoD regulation or instruction that guides the AoA process. As a result, the Services have latitude in how they execute an AoA, as long as they accomplish the objectives in the study guidance. However, a few best practices naturally arise. To ensure good interaction and communication between the Service and OSD stakeholders, an SES-level study advisory group (SAG) is established to monitor results during AoA execution. This group is chaired by CAPE and includes AT&L, Joint staff, and Service representatives. Correspondingly, the Service may establish a Service Executive Steering Board (SESB), an SES-level body that includes Service stakeholders from the requirements, acquisition, and resource communities.

The purpose of both the SESB and SAG is to ensure that senior leaders are familiar with emerging AoA results and can guide or redirect the effort as necessary, rather than being surprised by results at the conclusion of the AoA. Establishing a SESB also demonstrates that the Service is invested in the process, as opposed to "outsourcing" the AoA or assigning it solely to a Service analytical organization. The SAG and SESB most likely will be linked through common participants, which improves communication throughout the process and lowers the likelihood that surprising results or unexpected objections will be encountered. These groups also help facilitate another best practice—that of "transparent analysis."

Deficiencies in past AoAs have sometimes resulted from lack of interaction between the requirements developers (or users) and the acquisition community that conducted the AoA.

Prior to WSARA, after the AoA study guidance was released to the Service, there was often little or no interaction with PA&E or AT&L until the AoA report and briefing had been completed and fully coordinated through the Service. In an actual extreme case, a Component performing an AoA provided no updates during execution and provided the read-ahead literally on the morning of the briefing to PA&E leadership. Now, to be successful, more interaction with CAPE and AT&L during AoA execution is desired and expected. That doesn't mean that OSD personnel should direct the study or have significant influence on AoA execution decisions—there may be times when Service-only meetings are necessary. But keeping OSD analysts informed and involved to the extent they are comfortable will pay dividends in the long run, as it enables them to inform their leadership, so there are no big surprises when the AoA results are reported and reviewed.

AoA: Where Requirements, Acquisition and Resourcing Communities Come Together

As much as analysis has been mentioned, one might suppose that AoAs are prepared solely by analysts. In fact, that should not be the case. A wide-range of organizations should be represented on the study team executing an AoA, not only from the requirements, acquisition, and resourcing disciplines, but also from functional areas such as intelligence, logistics, technologists, testers, operators, etc. One should also consider involving contractors and non-DoD organizations; contractor input (properly safeguarded) can be useful in defining the feasibility of various alternatives, while non-DoD organizations sometimes have key information or a shared set of requirements that impact DoD programs. Deficiencies in past AoAs have sometimes resulted from lack of interaction between the requirements developers (or users) and the acquisition community that conducted the AoA. If the requirements are just "thrown over the fence" to the acquisition community and there is little interaction during AoA execution, it is difficult to make affordability trades, for instance.

What should an analyst or acquisition professional do about requirements that are deemed unaffordable? Ideally, user input would be solicited to modify, tailor, or prioritize the requirements. But if the user isn't involved, those performing the AoA are likely to make the best judgment they can based on the information available. Similarly, if an AoA is conducted without adequately defined requirements and the user isn't involved, analysts or acquisition personnel are forced to make judgments about requirements and capability gaps that the user should establish. Those conducting the AoA will undoubtedly put their best thought and effort into the problem, but the AoA is likely to suffer from the lack of user involvement. The AoA, more than any other acquisition document, is where the requirements, acquisition, and resourcing communities come together to decide which affordable alternative is best.

AoA: The Foundation of a Successful Acquisition Program

A well-executed AoA doesn't guarantee program success; many more things must be done right to effectively deliver capability. It's clear, however, that a poorly executed AoA makes success more difficult. Analysis that doesn't fully examine the tradespace or that is biased toward one alternative may lead to pursuit of an infeasible or inferior option. At the very least, it establishes a precedent that incomplete or insufficient analysis is acceptable, which is likely to become a pattern as the program proceeds. In the current fiscal environment, in which the DoD has rightly been criticized for spending as much as 40 percent of its acquisition funding on programs that were terminated before delivering capability, it is more important than ever to start a program on a firm foundation with a well-executed AoA.

When deciding where to live for the next 20 years, a prudent individual will consider all the viable alternatives—buying new, buying an existing home, custom building, renting, perhaps even living on a houseboat; the same principle applies to DoD before it invests in a weapon system it will likely use for 20 years or more.

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Vertically Synchronizing Operational Contract Support

Col. Ed Keller, USAF

The Department of Defense's reliance on contractors for the conduct of contingency operations can best be described as significant. In fact, in Iraq and Afghanistan the contractor population constituted more than 50 percent of the total in-theater force, with activities spanning a broad range of support operations including base-camp support, logistics (to include warehousing, transportation, and distribution), interpreters, advisory and assistance services, training, engineering, and construction (See Fig. 1). The financial resources required to assemble this force are impressive. The trends that drove this increased reliance, including the reduction in organic capabilities, force cap restrictions, and increasing complexity (and aging) of weapon systems, show no signs of abating in this era of declining budgets. This fact compels

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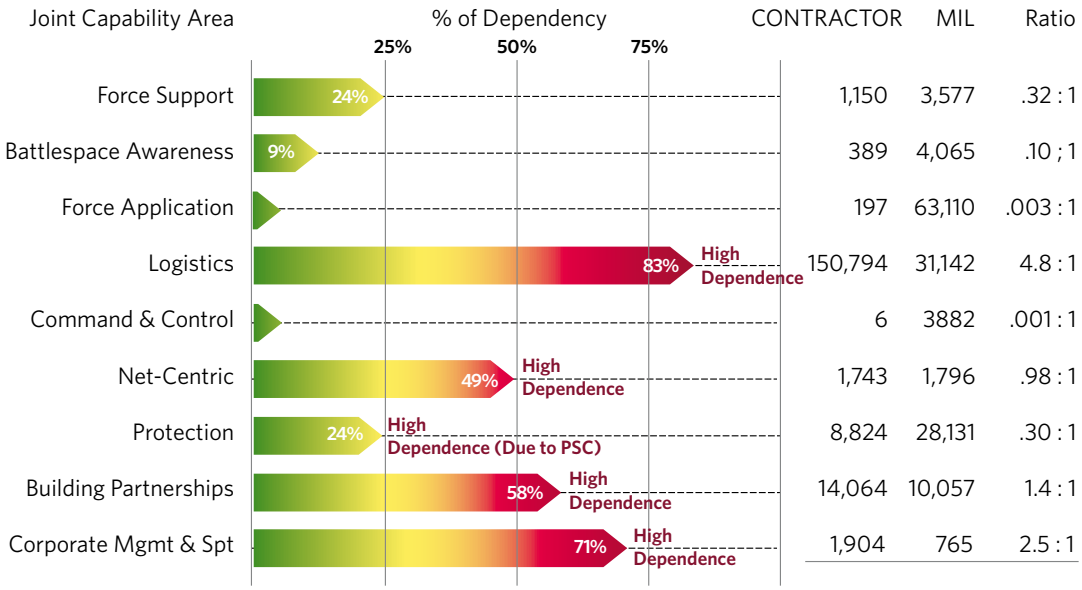
Figure 1. Contractor Dependency (OIF as of 2008).



Source: J4 OCS Branch

the Department to continually pursue more effective planning and execution of operational contract support (OCS).

To be sure, contractors are a definitive force multiplier, enabling a flexible response to meet emerging requirements in dynamic operations. In addition to the relative speed and flexibility of the contracted workforce, leadership increasingly recognizes the strategic importance of contracting to the achievement of broader economic objectives such as increased indigenous employment and financial activity. However, as documented by a number of commissions, boards, inspectors general, and auditors, many problems accompanied the execution of contracting in Iraq and Afghanistan. DoD was clearly unprepared for the up-front planning required to determine requirements and deconflict them among the Services.

There also were few policies in place to govern the oversight and management of such a large contractor force once they were on the ground. This includes policies addressing personnel and legal accountability, communications, and standards of contractor support (encompassing medical support, security, and housing). As the steady drumbeat of lessons learned, audits, and commission reports continued, focusing attention on more and more examples of mismanagement, inefficiencies and fraud investigations, the requirement for change became apparent. This drove the passage of the FY07–FY09 National Defense Authorization Acts (NDAAs) directing the Department to establish a more robust OCS capability from OSD and Joint Staff through the combatant commands (COCOMs) to the components and services.

The Department's comprehensive response to these legislative mandates included the establishment of additional OCS planners at the COCOMs, approval of an OCS doctrine (Joint Publication 4-10), improved training and education, establishment of two new Army contracting commands, and emergence of a burgeoning OCS Community of Interest, led by the deputy assistant secretary of Defense for program support (DASD (PS)) and the Joint Staff J4 intent on establishing, improving and institutionalizing OCS. The response also included the establishment of the Joint Contingency Acquisition Support Office (JCASO) chartered to "orchestrate, synchronize, and integrate program management of contingency acquisitions across COCOMs and other U.S. government agencies during combat and post-conflict operations."

JCASO was provisionally established at the Defense Logistics Agency (DLA) in July 2008, permanently established at DLA in August 2009, and reached fully staffing and operational capability in 2010. Its stated mission is to provide strategic and operational level OCS program management for combatant commanders (CCDRs) on behalf of DoD, including whole-of-government matters. When requested by the CCDR, JCASO provides an OCS enabling capability during contingencies to assist the CCDR in planning, organizing, staffing, controlling and leading OCS efforts required to effectively and efficiently meet joint force commander objectives. To perform this mission, JCASO relies on OCS planners located at each of the geographic COCOMs and on a centralized staff, established as part of the DLA Acquisition Directorate (J7) at Fort Belvoir, Va. (See Fig. 2)

DASD (PS) established the OCS planners at the COCOMs via contract in September 2007. They have since been converted to civil service and placed within JCASO. The planner's primary responsibility is to integrate OCS into operational plans during Phase 0. This includes reviewing the OCS plans of other DoD agencies and multi-national partners within the COCOM's operational areas. Clearly, this is far easier said than done, as the DoD planning culture has historically been focused on combat operations in early phases of operations, relegating OCS to an afterthought. However, the diligent efforts of OCS planners both past and present, combined with unremitting congressional pressure, is slowly turning the tide

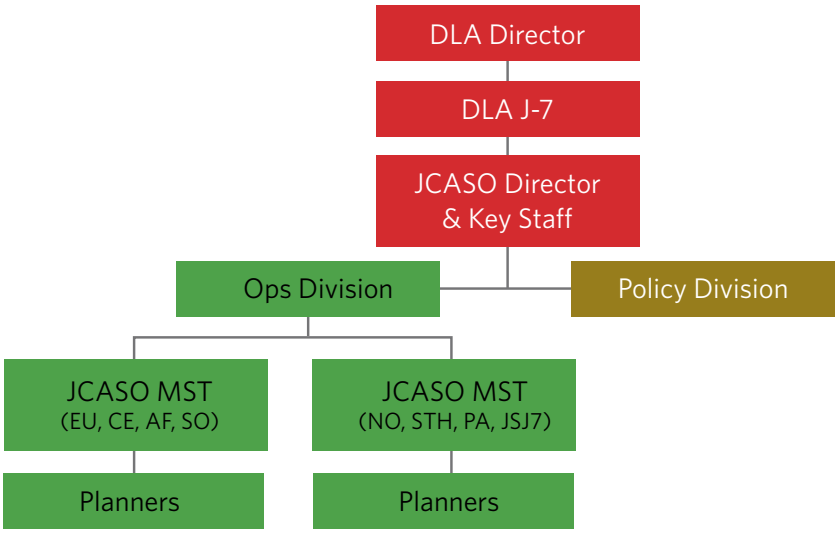
on this thinking and enlarging the profile of OCS in operational planning, exercises, and contingencies.

The planners, though embedded and under the tactical control of their respective COCOM staffs, report to one of two mission support teams (MSTs) located at JCASO HQs in Fort Belvoir. These multifunctional teams include active and reserve military personnel experienced in various disciplines relevant to OCS to include contingency contracting, engineering, logistics planning, program management, quality assurance and administrative mission support. The MSTs focus on supporting the COCOM's OCS efforts during all operational phases but, initially, have placed particular emphasis on contingency operations in Phases I–V when the MSTs deploy, at the COCOM's request, to provide the OCS "enabling capability" described above. During contingencies, the MSTs perform tasks, at both the COCOM and JTF levels, such as aiding in the establishment of command and control (C2) relationships between the COCOMs and service component contracting activities, doctrinally mandated boards, centers, and cells to manage the acquisition process and enabling the dissemination of commander's OCS-related guidance addressing such matters as theater business clearance, private security contractors and contracting officer representatives.

As the steady drumbeat of lessons learned, audits, and commission reports continued, focusing attention on more and more examples of mismanagement, inefficiencies and fraud investigations, the requirement for change became apparent.

As a result of this emphasis on contingency operations, the MST's Phase 0 COCOM engagement usually focuses on planning and participating in exercises aimed at developing trust between JCASO HQs and its COCOM counterparts while gaining proficiencies in managing and synchronizing the OCS function in the contingency environment. In the meantime, JCASO's Policy Division, comprising procurement, interagency contract administration and policy expertise, focuses on supporting the MSTs as required while maintaining engagement with the broader OCS Community of Interest (COI), particularly OSD and the Joint Staff J-4.

Figure 2. JCASO Organizational Chart



Source: JCASO

While JCASO remains engaged in preparing for Phases I-V, its approach to providing Phase 0 support has evolved from the largely COCOM staff augmentation function with strong emphasis on exercise participation described above into an active "vertical" approach of productively engaging the OCS COI at all levels to produce tangible benefits for operational forces now. This involves enabling and advising the COCOMs, components and contracting activities as they execute OCS worldwide while simultaneously participating in the development of policy, doctrine and other OCS enablers with OSD and JS. The jointly staffed MSTs, with "deep dive" analytical support from JCASO's Policy Division, regularly engage the COCOMs and components on OCS matters related to policy, staffing, organizational options, component and service coordination, collection and analysis of lessons learned, and exercise engagement. The information gleaned from these operational level activities continuously circulates back to fuel JCASO's contributions to OSD and JS-led policy and doctrine reviews.

As an extension of this approach, JCASO HQs also leverages its organizational proximity to OSD, JS, the COCOMs and Services to, upon request, develop and test OCS resources and tools or perform functions vital to the maturation of OCS as an operational capability. In doing so, it helps fulfill the DoD's intentions to establish effective processes and tools for managing contracts within an operational

battlespace. For example, JCASO recently completed a Lead Service for Contracting (LSC) Guide, detailing the responsibilities of a lead service by operational phase (0-V), complete with links to governing authorities and best practices. It then utilized and validated the Guide during both the PANAMAX and Ulchi-Freedom Guardian exercises. In many ways, the LSC Guide project typifies JCASO's active "vertical" approach. Through its implementation, JCASO provides benefits at all levels of the OCS COI; the Service components receive a valuable tool to aid their preparation for a potential role as a LSC; the COCOMs benefit from a better prepared, more effective lead service; and the Joint Staff receives more in-depth, operationally vetted information for possible inclusion into doctrine or other authoritative documents.

This evolving "vertical" engagement approach during Phase 0 greatly enhances JCASO's effectiveness when deployed during Phases I-V in support of COCOM requirements by providing a stronger team dynamic and a richer, more contextual knowledge base than can be obtained via the previous staff augmentation, exercise-focused model. JCASO has been developing a symbiotic partnership with the COCOMs by routinely conducting deep-dive analysis on OCS matters, remaining engaged and current on COCOM operational issues, producing OCS solutions addressing current operations challenges, and synchronizing the COCOMs, components, and contracting activities to meet Phase 0 requirements. Together, they forge their combined team in the fires of real-world trials and, thereby, adeptly prepare for the rapidly developing challenges inherent in the contingency environment. When coupled with the teamwork acquired during COCOM exercises (still an important aspect of JCASO's mission), this hard-earned team chemistry is further honed by "game day" conditions, increasing theater-specific shared knowledge while solidifying trust and working relationships between JCASO and COCOM staffs. This creates an unassailable team partnered to effectively plan and execute OCS, building on the lessons of the past to more effectively address the challenges of the future.

As a new organization, JCASO's journey from the broad vision established at its inception to its development as a key integrator delivering real-world solutions will continue to adapt and adjust in response to the emerging requirements of the OCS COI. However, in the long run, JCASO's persistent, simultaneous "vertical" engagement, adjoined to the intent of OSD and the Joint Staff, will increasingly focus DoD's disparate OCS efforts into a critical mass well-positioned for integration ever deeper into operational planning, preparation and execution. With origins rooted in the emergence of OCS as a vital national security issue, organizational proximity to OSD, the Joint Staff and COCOMs, and emerging partnerships with the service contracting activities, JCASO is and should remain well-situated to serve as an organizing framework for focused, results-driven execution of the global OCS mission.

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Opportunity Management

Return on Investment—Realized

Col. R.D. Pridgen, USMC ■ Paul Mallon
Duane Mallicoat ■ Jackie Triplett

The concept of opportunity management (OM) involves the identification and possible action on items that may improve a program. Due to conceptual similarities or programmatic convenience, an OM program (OMP) may be run in conjunction with an organization's more traditional risk management program (RMP). As in the standard DoD RMP (i.e., described in the Risk Management Guide for DoD Acquisition), the basic OMP measures the likelihood of a particular event. In contrast to an RMP, an OMP measures potential benefit of that particular event to its program versus the potential consequence as measured by an RMP.

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Thus, both RMP and OMP may use a similar graphical tool for measurement and tracking: the risk or opportunity "cube." One measures likelihood versus consequence while the other provides likelihood versus benefit. Thus, the program team tasked to manage its risk posture may be given the additional task of opportunity management. Handling strategies for a given opportunity are different than those employed by a traditional RMP: An OMP exploits, shares, enhances or accepts a potential opportunity, while an RMP avoids, transfers, mitigates, or accepts program risks.

OM Implementation

An OMP may be implemented using a notional framework consisting of seven major steps:

- Empower your OM integrated product team (IPT).
- Identify opportunity candidates.
- Assess the opportunity candidate for advantages and disadvantages.
- Establish an implementation plan.
- Validate all assessments and plans.
- Maintain control/oversight.
- Communicate and document.

These steps can be used to formalize a structure for managing opportunities, should a program be willing to dedicate the resources necessary to achieving a return on investment in those opportunities.

The PMA-261 OM Program: Establishment

After a somewhat fitful start, PMA-261's insertion of an opportunity management segment into an already up-and-running risk program evolved into an institutionalized combined risk and opportunity management program. That program accelerated with the introduction of L-3's Risk and Opportunity Management Application (ROMA) software tool throughout the PMA-261 workforce. That software tool enabled the compilation of program risk, issue and opportunity information into one central database in an automated and user-friendly manner that provided the program team easy access to data as well as more meaningful and tailorable data reports.

Further, a clear and concise set of OM procedures was captured and distributed in a program-specific OM principles guidelines document. Developed with inputs from the entire PMA-261 IPT structure, the OM principles document has been embraced across the PMA-261 enterprise. Taken together, those two products served as a catalyst that enabled a robust and productive OM program for PMA-261 and all its stakeholders, including the program's prime contractor, Sikorsky Aircraft Co. (SAC). The OMP leadership and execution responsibilities rest with the program's Joint Risk Management Board (JRMB), which handles both risks and opportunities, conducting normal business at monthly meetings.

The PMA-261 OM Program Scorecard: Return on Investment—Realized

By leveraging the already established levels of likelihood criteria from the risk program, PMA-261 formed one side of the opportunity "cube." (See Fig. 1.) This graphical tool was completed by creating the levels and types of benefit criteria: Scales were developed via allocation of benefit thresholds ("levels" 1 through 5) for each of the standard impact areas of cost, schedule and performance. Conceptually and graphically similar to the standard DoD risk cube, the PMA-261 opportunity cube served the standard scoring narrative of likelihood (probability) versus effect (i.e., benefit, should realization occur). A typical opportunity might be scored as: Likelihood 4, Benefit 5, Technical (i.e., L4B5 (T)), which translates into a highly likely probability that an opportunity will be realized, resulting in an exceptional increase in technical performance (see Figure 1 for a snapshot in time of the PMA-261 OMP cube and departure from the standard red, yellow, green risk color scheme). For opportunity management, that simplified scoring approach seems incomplete in today's austere fiscal environment, wherein program actions are likely scrutinized for any realizable "efficiency."

The opportunity scoring rubric may be enhanced by adding ROI to the OMP "scorecard." PMA-261 has, in effect, accom-

plished that by providing expected program "value added" should an opportunity be realized; when possible, the value added is dollarized. The value added or ROI is judged by the JRMB as part of its standard monthly procedures: After opportunity identification, its owner provides the expected opportunity cost (the investment) and potential value added (the ROI) as well as the plan to realize the opportunity (including source of initial investment).

Typical of PMA-261's approach to ROI for its OM program is its now closed "ballistic vulnerability testing" opportunity. Early in the CH-53K development program, the technical team realized that weapon system live fire test and evaluation (LFT&E) ballistic vulnerability testing was scheduled too late in the program to affect system component design; reschedule of the system test was eliminated as an option due to various program constraints and externalities.

The strategy chosen to offset potential problems that might be caused by LFT&E results that could not affect component design (i.e., adding extra armor to reduce vulnerability) was to seek opportunities to perform early ballistic vulnerability testing of system components, an approach not called for in the basic development program. Inputs from the owning IPT, including Sikorsky and the Weapons Survivability Laboratory (WSL) of the Naval Air Warfare Center, Weapons Division (NAWCWD), China Lake, Calif., led to an estimated $800,000 to purchase the appropriate parts, conduct the test, and analyze the results. Potential benefits associated with the ability to affect component design were also identified: Weight avoidance associated with providing armor versus more robust components to achieve system level vulnerability requirements and the ability to affect the system level survivability model is a good example. Elimination of this potential need for armor evolved into an estimated maximum weight avoidance of 110 pounds (lbs); the standard PMA-261 weight control and management plan metric for weight avoidance is $100,000/lb. This one example illustrates how a program's ability to provide an earlier and more accurate system-level survivability model could enable a better prediction of weapon system survivability (key performance parameter) by program preliminary design review (PDR), a user requirement.

More on OM

The concept of opportunity management (OM) has been developed over three previous *Defense AT&L* articles. The first article ("Should Opportunity Management Be Added to My Program's Acquisition Strategy?" May-June 2007) described the basic OM concept in terms of "what" it is and the potential program benefits involved in the implementation of an OM process. The second article ("Opportunity Management: Deciding to Make it Part of Your Acquisition Strategy?" July-August 2007) developed the "how" of implementing a notional OM process, suggesting a framework of seven major steps. The OM process instituted by the CH-53 Heavy Lift Helicopters Program (PMA-261) served as a detailed implementation example in the third OM *Defense AT&L* article ("Opportunity Management Implementing a Positive Complement to Risk Management" January-February 2010); it provided a template that could be used to understand the requisite detail that it takes to execute an effective OM process.

Ultimately, the component ballistic vulnerability testing was conducted and results were positive: The addition of armor was avoided, and the survivability KPP was achieved. Approximately 100 lbs. of armor was not added to the CH-53K, avoiding approximately $10 million in aircraft survivability costs. However, cost avoidance alone should not be considered the full opportunity ROI. Rather, there are other more intangible elements contributing to the overall ROI: User confidence in the weapon system was enhanced by a more accurate KPP prediction at PDR and perhaps most significantly, the warfighter will be delivered not only an aircraft that meets its survivability KPP but one that can lift an additional 100 lbs. of cargo to its intended recipients.

Another rewarding opportunity for the CH-53K program involved a cooperative effort between PMA-261 and SAC. Less than 18 months after opportunity initiation by the JRMB, funding was obtained and software was evaluated, tested, procured and installed at SAC for a CH-53K virtual reality simulation—a first for any SAC aircraft. (See Fig. 2.) This "reality" software simulation allows engineering and logistics personnel to prove out various production, assembly, support and maintainability processes. The virtual reality software can "accept" component software models to provide the engineer/user a reality simulation, including weight, fit, and feel of various designs; a "step inside" the model can be taken for rapid installation checks which, in turn, can serve to reduce the normal

Figure 1. Typical PMA-261 Opportunity Cube

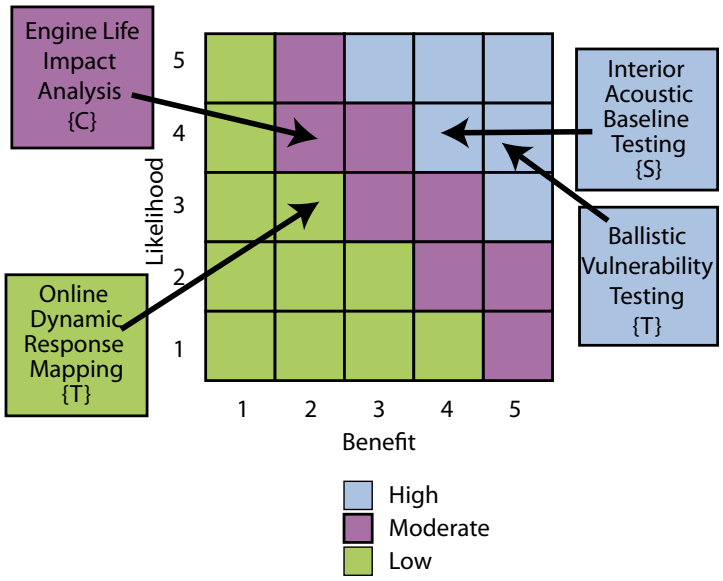
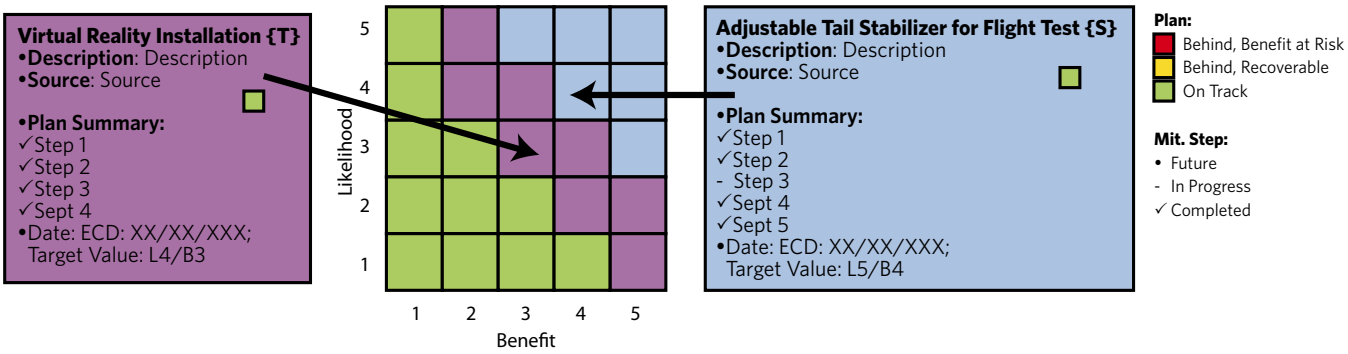


Figure 2. PMA-261 Executive Cube CH-53K Opportunities as of 12/1/2011



engineering change traffic of an aircraft development program. This approach obviates the more traditional need for multiple aircraft mock-ups. Four months after software installation, training was complete and the system was in use. The realized ROI for this $1.4 million investment is estimated by the JRMB to be at least $3 million.

A simpler CH-53K realized opportunity involved an engine life impact analysis to be conducted at multiple aircraft gross weights by the engine manufacturer. Originally considered prudent, the required approach utilizing multiple aircraft weights was reconsidered and, after approval obtained from the appropriate personnel, discarded as unnecessary. Instead, a single analysis at the maximum weight was conducted, saving the program approximately $3.5 million, due to analyses not performed.

OM Benefits

PMA-261's institutionalized combined risk and opportunity management program has captured significant program benefits, some of which would not have been realized without the addition of the OMP. Additionally, the combined program was better equipped to rigorously scrub proposed additional program-level tasks found to require too great an initial investment, compared with estimated return. A robust OMP adds flexibility to the standard risk management approach: Program leadership may seize identified opportunities to not only provide the program with additional positive impact but to also help mitigate established risks. Program ROI can be realized, both measureable and intangible.

We believe OM is an extension of the disciplined SE approach. The CH-53K team is pushing beyond those traditional opportunities that help us recapture capability or avoid cost increases to the program to a state where real returns or cost savings can be realized. OM mindset has put this program team on the offensive. It's an attitude of winning for the Marine Corps, which needs this capability, and the taxpayer who foots the bill.

OM can be a benefit in the management of not only technical risk, but cost risk as well. Case in point is PMA-261's initiative to create an internal Program Cost and Affordability Team (PCAT) which use the program's OM framework as a way to manage cost risks in support of their "should-cost" program analysis. The addition of the PCAT allows PMA-261 to focus on all areas of the program applicable to cost and use a structured methodology to manage this process to completion.

The evidence from PMA-261's combined risk and opportunity management program indicates that positive impacts on cost, schedule and performance can be realized by investing the necessary resources to establish an opportunity management program. In today's austere economic environment wherein every program action is scrutinized for maximum efficiency, taking advantage of opportunity management as a standard programmatic tool should be considered.

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Air Force Adopts Standard Integrated Baseline Review Process

Photo courtesy U.S. Air Force

Amy Mercado ■ Blaine Schwartz ■ James Ivie

The Air Force's KC-46A (tanker) Program Office and the prime contractor, Boeing Defense Systems, recently completed an integrated baseline review (IBR) using a pilot process developed by the secretary of the Air Force's Acquisition Excellence and Change Office (SAF/AQXC). A closer review of this new IBR process reveals its distinctive approach and how the IBR team was able to complete the process 1 month earlier than contractually required.

Integrated baseline reviews have their foundation in EVM. IBRs have been required of earned value programs since the early 1990s when product divisions and acquisition centers had their own processes for conducting these reviews. Over the next decade, IBR guidance continued to evolve from a variety of sources. In 1996, the DoD *Earned Value Management (EVM) Implementation Guide* (EVMIG) was published. In 1999, an Air Force IBR pro-

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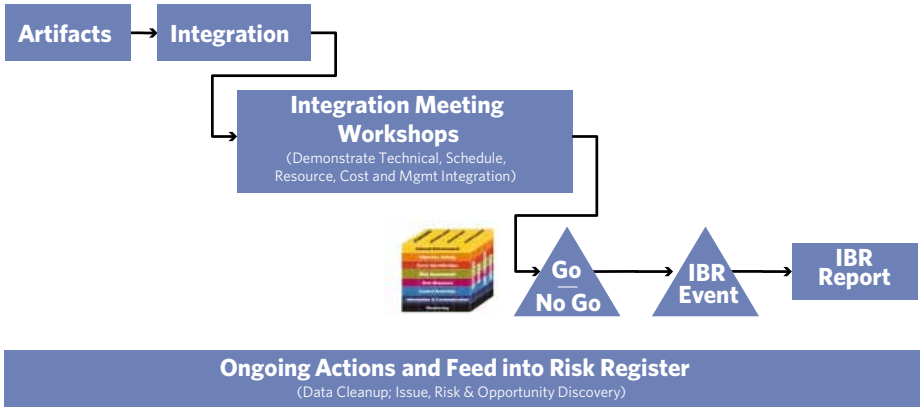
cess was released. In 2003, the National Defense Industrial Association's (NDIA) *Program Manager Guide to IBRs* was developed and subsequently endorsed by DoD. In 2006, the EVMIG was updated. In 2010, the NDIA IBR document was updated. While the IBR process evolved through a variety of guidance documents, the application of the process was far from uniform.

Figure 1. AF IBR Process



IBR Problem Statement

SAF/AQXC began an initiative in early 2010 to improve the IBR process and developed several hypotheses. One was that IBRs were not conducted consistently across Air Force organizations. Second, process inconsistencies were leading to inefficiency and confusion. Additionally, there was concern that, while IBRs were successfully conducted, there were unacceptable levels of subsequent cost and schedule growth. Contractor and government expectations were not clearly understood. Industry was unsure how to prepare for each IBR. Joint programs were having trouble agreeing on which IBR process to utilize. An Air Force EVM query of product and logistics centers conducted in the spring and summer of 2010 confirmed these hypotheses.

SAF/AQXC recognized several challenges to implementing a standard IBR process. The purpose and importance of an IBR was not clearly understood. Often, the focus of the IBR was on EVM compliance, not technical baseline achievability. There was little focus on how technical, schedule, and cost risk impact integration.

Air Force IBR Process Development

In the summer of 2010, SAF/AQXC began developing a refined IBR process. The goals of the process were to provide a consistent IBR methodology that focused on program risks involving all functional experts—engineering, manufacturing, cost, logistics, contracts and EVM—and to be a collaborative process with industry. With these goals, the SAF/AQXC team planned to avoid the "big bang" IBR event approach, with significant action items taking months to close the IBR. Traditional IBRs begin with a data call, followed by an intense review of the data, conducted in 2 to 3 weeks by a large number of people. This process is often referred to as the "big bang." Under the revised process, with increased government and contractor collaboration, the baseline would be developed and refined beginning shortly after contract award and the "big bang" event would be reduced to reviewing and approving a jointly understood achievable performance measurement baseline. A draft of the IBR process was completed in September 2010. Figure 1 shows the fundamental parts of the IBR process.

Some key characteristics of this process include the early formation of teams organized by the five standard IBR risk topic areas (technical, schedule, resource, cost, and management systems), and an early start reviewing and refining the definition of the PMB. The PMB must trace from top-level requirements to the work performed at the control account level. The work has cost and schedule dimensions. Getting all documents to correctly reflect the PMB is essential for effective execution of the program. The various artifacts (data elements that may or may not be a standalone document) associated with the PMB are evaluated for quality as well as their integration with other artifacts. Where exceptions are discovered, artifacts are refined immediately by the joint government and contractor IBR team. Refined documents are checked again to validate the changes. As documents are reviewed, risks are identified, understood, and mutually agreed upon. After the PMB artifacts have reached an acceptable level for quality and integration, discussions with control account managers (CAMs) are held to ensure the PMB is executable and achievable at the lowest work level.

The IBR process document included a list of recommended IBR artifacts, integration points among the various artifacts, and recommended topics for CAM discussions. The IBR process document also included scoring criteria for artifacts and CAM discussions as well as action item tracking templates.

After the IBR process document was drafted, David Van Buren, as the Service acquisition executive (SAE), approved its use on a pilot program.

KC-46A Pilot Process

The KC-46A program had contract award on Feb. 24, 2011. In March of that year, the KC-46A program accepted the opportunity to pilot the new SAF/AQXC process. The process was presented to Boeing the same month. A number of working-level meetings increased joint understanding of the new IBR process and all parties agreed to the pilot process at the KC-46A Program Startup Workshop on April 15, 2011.

The IBR process was executed in a very timely manner. Figure 2 shows the timing of major events.

At the Program Startup Workshop, the Joint IBR team (Boeing and the KC-46A Program Office) agreed to the artifact list for the IBR. In early May 2011, IBR training was conducted for the joint team at the contractor's facility. During that meeting, the joint team agreed upon artifact quality standards and artifact integration points. The individual topic area teams then began their evaluation of artifacts that define the PMB.

The chart shows the KC-46A Systems Requirements Review was conducted during the period of the documentation quality and integration reviews. The IBR was able to take advantage of the SRR timing by using the SRR activities to validate the flow of requirements from the capability development document (CDD) down through the system specification. Similarly, the integrated risk assessment (IRA) process contributed to the IBR process by identifying additional technical risks. One important lesson for any IBR is to take advantage, where possible, of any other program events. During the conduct of the IBR, adjustments were made to the pilot process based on feedback and lessons learned.

As the first phase of the IBR process (document quality and integration review) was coming to a close, a readiness review was conducted. The review presented the documents evaluated plus open and closed action items. Based upon the results, the program manager made the decision to go forward with the second phase, CAM discussions. Aeronautical Systems Center (ASC) conducted training on earned value, the pilot IBR process, and CAM discussion techniques. CAM discussions were conducted over several weeks. CAM selection criteria had been decided at the Program Startup Workshop, and individual CAMs were selected using the criteria as the responsibility assignment matrix (RAM) was developed and refined. CAM interviews took advantage of video teleconferencing where possible to minimize contractor and program office travel expenses.

Following the CAM interviews, an IBR exit briefing was conducted to conclude the IBR process. Program risks were reviewed as well as open action items. Risk ratings were discussed. At the conclusion of the IBR exit briefing, the PMB was approved and an IBR memorandum for record prepared.

Adjustments (Real-Time Lessons Learned)

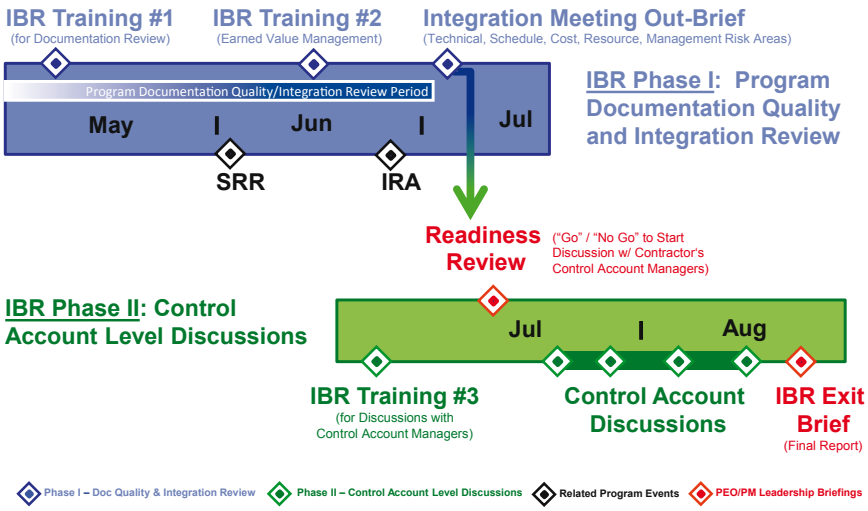
The pilot IBR process was drafted with five phases and entrance and exit criteria for each phase. Early in the KC-46A IBR process, it became apparent that holding to entrance and exit criteria could delay the process. The KC-46A Program Office and the SAF/AQXC IBR facilitators revised the process to two phases and allowed concurrency where artifact quality refinement would not impact CAM discussions.

The pilot process contained an extensive list of over 50 IBR documents. The list covered a variety of possible acquisition phases. During the Program Startup Workshop, the list was tailored to the specific program. Where multiple artifacts were addressed by a single program document, the list was reduced to 29 documents for the KC-46A EMD program. Most documents were contract deliverables, plus a few data call items such as control account plans or the program RAM.

The pilot process included quality acceptance statements for the artifacts. During the KC-46A process, this matrix was converted into a narrative document for ease of use by less IBR experienced team members.

The pilot process contained an integration matrix that listed integration points for various artifacts. For example, the IMS has integration points with the statement of work (SOW) and the integrated master plan (IMP). The integration matrix was

Figure 2. KC-46 IBR Process



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expanded during the IBR into a narrative format where the integration points were defined in more detail, source documents identified, and the standard for acceptance was included.

During the pilot IBR process, a running list of observations was maintained by the SAF/AQXC IBR facilitators. At the conclusion of the IBR, separate lessons-learned sessions were held with the KC-46A Program Office and members of the Boeing IBR team. Recommended changes will be considered and incorporated into the updated IBR process document.

Results/Benefits

The results of the Air Force IBR pilot process are encouraging. The IBR was completed 1 month earlier than contractual requirements and with only three open action items.

Both contractor and program office IBR teams felt the incremental nature of this IBR process fostered teamwork. Both groups felt that program expectations were better understood as a result of the collaborative process of artifact reviews and PMB development. It was clear from the pilot that issues are discovered and resolved earlier with this approach. Risks are better understood, and action items are closed far faster than the "big bang" IBR method.

One of the ideas expressed from the KC-46A IBR team was to make the IBR event a "non-event," meaning no surprises at the end of the process and minimal corrective actions after the IBR. The incremental collaborative approach of the Air Force IBR process makes that possible. There were no surprises on either side during the exit briefing.

Maj. Gen. (select) Christopher Bogdan, KC-46 program executive officer, said, "The new IBR pilot process developed by SAF/AQXC provided an excellent roadmap that allowed the KC-46 IBR team to execute a comprehensive, disciplined, and detailed baseline review. We understand the baseline and the cost, schedule, and performance risks inherent in that baseline as we move forward to execute the KC-46 EMD program. One key to this success was Boeing's willingness to lean forward and accept the challenge of implementing a new pilot program with us. The extended Air Force and Defense Contract Management Agency team did a fantastic job, while completing the effort 1 month ahead of the contract requirement."

The pilot Air Force IBR process is available on the Air Force Acquisition portal, at https://www.my.fa.mil/gcss-af/USAF/content/ibr. It is ready for use by any DoD organization with access to the portal.

For further information on the Air Force IBR process, please contact Amy Mercado at the e-mail address below or at (937) 656-7278.

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Cybersecurity:

Program Managers Have Questions. Got Answers?

Brian Brodfuehrer

Cybersecurity is an area where program managers (PMs) find themselves between opposing forces. It is clear to them that cybersecurity is important and needs to have their attention, but where does it fit with all the other program priorities that have to be worked up front and early? What exactly should they be putting their attention on, and how? The kind of information they need on the subject is in the middle too; it is not at the national strategic policy level (although that affects them), and it is not in knowing the latest virus, back-door weakness or technology advance (but that is an impact too).

More than 2 years ago, the Defense Systems Management College of the Defense Acquisition University began to pull more cyber-related information into its executive-level education programs. We developed a disguised cyber-based dilemma case study called *Greyhawk UAV* and piloted an elective titled *Cybersecurity for Program*

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Managers which remains a work in process. As a faculty member, I began to ask my students: "What is one thing you wished you knew about cybersecurity?" The military and civilian students were from military Services, government agencies, and the defense industry. They were a mix of Level III certified O-5/6 and GS-14/15 acquisition professionals with an average of more than 10 years of experience. Over the past 2 years, I collected many questions and have now grouped them into theme areas.

This article is more about sharing the questions than about answering them. I will, though, share a few tips I have collected that are of value to PMs. I am interested in developing a continuing dialogue on cybersecurity, tailored for PMs. To that end, DAU is looking to establish an online community of practice on the NIPR and SIPR network environments. The goal is to have an ongoing forum where PMs can ask questions and where cybersecurity experts can help with answers that will work for the program managers.

Shaping the Cyber-Question Landscape: A Framework for Analysis

Approximately 150 questions were collected and grouped into theme areas. These theme areas were then arranged in an acquisition-focused landscape with the program manager at the center. This framework provides a first insight into how to go about answering the questions and how to teach the material to future students. (See Fig. 1.)

In the center of the figure are the PMs and their key stakeholders. Their job is to make progress along the acquisition process to get the system into the user's hands at the lowest reasonable cost. The PM is ultimately trying to make wise use of scarce taxpayer resources to quickly get the best value product to those in harm's way. From the PM view in the center, everything else can be viewed as a strength, weakness, opportunity, or threat to getting that job done. Program managers' cyber concerns overlay the whole acquisition process and they need to understand and have access to resources and tools to help mitigate the concerns.

The PM questions covered both pre-attack and post-attack scenarios with the latter causing the most concern. Looking at the figure, cyberattacks can come from external or internal actors and can exploit any vulnerabilities in the system. By "system," I mean the big picture, including the people, process, and products across the acquisition lifecycle. When a cyber threat exploits those system vulnerabilities, the attack should be identified and a response created to mitigate the attack. Program managers want to know the best way to go about doing that. But, they were also concerned about how to do the proper planning necessary to avoid an exploitation. Those questions were captured in the figure under the other blocks: organizational roles and responsibilities, PM responsibilities, supply chain, acquisition process and milestone requirements, risk management (including a reality check), people and team development, improved computer and network security practices, certification and accreditation, training, PM cyber guides, and getting help from subject matter experts. PM questions about cybersecurity span the life cycle, and the action to design a robust system will likely depend on the operational CONOPS, the information and access that need protection, the system vulnerabilities, and the threat and nature of the potential attack.

Questions and Tips

Below are listed typical questions from about 2 years of student inputs. Over this time I have also collected tips for PMs dealing with the cyber area. The tips are not intended to be full answers to the questions; they are just the best I have at this time.

Threats

What is the scope of potential cyberattacks as a whole and what methods are used most frequently?

What is the biggest cyber threat that should concern program managers?

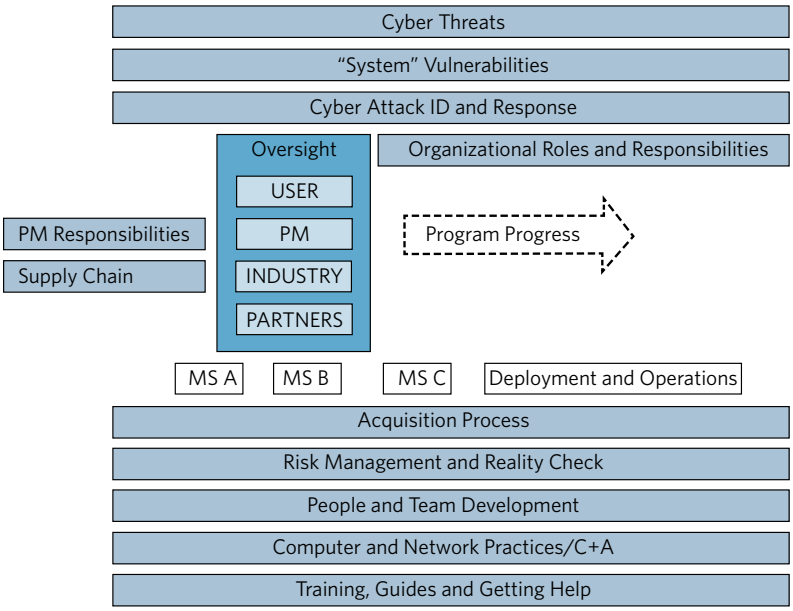
What are the latest (emerging) threats to DoD networks?

Is there a government organization responsible for assessing the threat? How do I interface with that organization?

Vulnerabilities

How do I determine how vulnerable my program is? How do I minimize the danger of compromise? Are there tools, techniques, or processes to assess system vulnerabilities?

Figure 1. PM Cyber Landscape



What is the process for obtaining a vulnerability assessment and how do I get periodic assessments?

Tip: Know what you need to protect; it may be more (or even different) than what you expect.

Tip: Do not discount the value of unclassified information. When separate bits of unclassified information are pieced together, they can produce a story that may reveal sensitive or even classified information.

Attack Identification and Response

How are cyber-attacks identified and reported within the military services?

Can you provide response strategies and approaches for different scenarios such as attacks being directed at: the government program office, a government partner, the prime contractor, a subcontractor, a vendor or an operational system? A step by step process for how to deal with potential breaches would be helpful.

Are there mandatory reporting requirements? What are the triggering events, processes to follow, timelines to be used in following the processes and names of individuals and organizations to contact?

How would I or one of my industry partners know we are under attack? What do I do, whom do I talk with if my team suspects an attack or breach?

How do I assess and monitor the threats, vulnerabilities and security across a large, multi-vendor program?

If I am working in a cloud environment (government or commercially based cloud) how can I be alerted to an attack that might impact my program? Would response processes differ from a non-cloud environment?

Organizational Roles and Responsibilities

What is the chain of command for cybersecurity in the different Services? For example in the Navy there is a Naval Net Warfare Command and a new Cyber Fleet Command. What are their roles and responsibilities? Again, how is cyber split up in the other Services that have similar cyber commands?

How do program managers, Services, organizations combine resources to counter the threats?

Who has overall jurisdiction when a cyber-event happens in a program management office or in a related industry partner?

What resources are available, knowledgeable and willing to help in this field? I have heard of organizations like: Defense Cyber Crime Center (DC3), Damage Assessment Management Office (DAMO), Chief Information Security Officer (CISO), Defense Industrial Base Collaborative Information Sharing Environment (DISCE). Can you describe their roles and capabilities and how to contact them?

Program managers' cyber concerns overlay the whole acquisition process and they need to understand and have access to resources and tools to help mitigate the concerns.

Is there a list of key points of contact, phone numbers, and e-mail addresses to contact, either to obtain help or to report a problem?

Can you provide a specific process for notification of compromises and the AT&L (Acquisition) organizations responsible?

Tip: Know the people (and organizations) that can be helpful.

Tip: Each Service branch deals with cyber in a different way. If you work on a joint program, don't assume that just because you classify something as CPI, another branch will do the same. Also, don't assume everyone on a joint program is following the same processes required by your branch of Service.

PM Responsibilities

What authorities and limitations does a PM have for establishing and enforcing cyber requirements?

What documents should a PM use to plan for cybersecurity? And how does the planning flow to the contractor supply chain?

Is there contracting language or lessons learned available to help?

What cybersecurity issues could slow or stop a program?

Tip: Ensure everyone, including your leadership, realizes they are accountable for cybersecurity.

Tip: Communicate across systems and functional boundaries. IT systems owners need to talk with mission systems owners and security pros with software developers, for example. The boundaries are often connected. Expertise on both sides is needed to effectively work the problems but they don't naturally communicate.

The PM must work the people side. Create, encourage and reward those cybersecurity-professional 'heroes' who are inclined to learn the technology and the problems and work to create operationally sensible solutions and policies.

Supply Chain

Is there a list of trusted hardware, integrated circuit and software foundries/developers? Are there any regulatory requirements on software, middleware, hardware and integrated circuits?

Is there a mechanism in place to quickly evaluate all subcontractors throughout the supply chain? How do I set up and maintain a cost-effective plan for supply-chain security management?

What are key vulnerabilities to be aware of when buying commercial parts?

Tip: Ensure industry partners are aware of and working to minimize threats throughout the acquisition lifecycle.

Acquisition Process and Milestone Requirements

What makes a good program protection plan (PPP)? Are there examples and templates?

How is critical program information (CPI) determined? Are there tried and effective methods for determining CPI? What are the important occasions for updating the CPI list?

What cyber-related documentation and information is required at different milestone gates? Who on the service and OSD staffs gives the OK to the documentation work that has been accomplished?

What are best practices for planning before the inevitable cybersecurity issue arises? Is there an acquisition phase based approach for the best practices?

Tip: The program protection plan is a tool in your cyber risk management toolbox. Don't just push it through the process; spend time preparing it, and get the right people working on it with you.

Risk Management

How do you determine the best tradeoff between usability and security?

What is an objective standard for deciding how to balance "protection" with "over-reaction" and the resulting costs?

Tip: Cyberthreats cannot be totally mitigated: You must manage the risk!

Reality check

What are the truly effective countermeasures vs. the things we throw our money away on?

What is the prevalence of cybersecurity incidences that impact program offices?

What are the "real" threats out there?

People and Team Development

How do I ensure my staff, especially systems engineering and security personnel, are properly trained to consider information assurance throughout the system architecture and life cycle?

Our program security folks are mostly trained and involved with physical security. How do I help them transition to understanding and working on cybersecurity?

Is there a DAU or other DoD organization career field (or series of courses related to cybersecurity)? Is cybersecurity seen by DoD as an acquisition competency?

Tip: The PM must work the people side. Create, encourage and reward those cybersecurity-professional "heroes" who are inclined to learn the technology and the problems and work to create operationally sensible solutions and policies. Heroes are not the rock throwers (those who point out problems and do nothing to solve them). Drive for consensus among the experts so that the team can move forward to accomplish something.

Tip: Every time you (or one of your staff) logs into an IT system, consider yourself "at war."

Improved Computer and Network Security Practices

What is the latest thinking on whether longer passwords really make us more secure?

How do I make cyberdefense undetectable to the attacker and low-impact to the operational effectiveness of the organizations and users of the systems?

How do I measure the effectiveness of the cyberprotection approaches my program has in place?

How do I translate abstract concepts to concrete steps to defend information without breaking my budget and without coming across as a dictator in seeking and obtaining alignment with the other program "up front and early" swim lanes?

Certification and Accreditation (C+A)

What is the correct process for obtaining the necessary DoD approvals for network connectivity for NIPR and SIPR?

How do I work C+A for a system that crosses Services or agencies? How do I obtain system certification by one agency that will be recognized by another one?

Training

What training is available to assist PMs with cybersecurity as it relates to programs?

Tip: Your policies are no stronger than the weakest link on your team. Take advantage of every opportunity to educate and train your staff on cybersecurity.

PM Cyber Guides

Is there an information card with phone numbers to call?

Is there a book or guide: *Cybersecurity, a PM Guide to Success*?

What are the simple things the PM can do to protect government and contractor networks?

Are there checklists or tools to determine areas of weakness of a program protection plan?

Getting Help

What organizations provide cybersecurity protection for government programs?

What subject matter expert support outside our agency is available to help?

What are the latest tools, technologies and techniques for cybersecurity?

Where can I access government or contractor expertise to assist the PMO in identifying CPI and how to effectively and economically protect it?

What's Next?

This article is intended to start an ongoing dialogue that will identify questions program managers have about cybersecurity and establish a source for answers. There is also another important question that the larger community can help answer: "What questions should we be asking, but are not?" By sharing the questions and setting up a forum to discuss them and their answers, DAU can raise awareness of the threat and of ways to protect the nation's acquisition programs.

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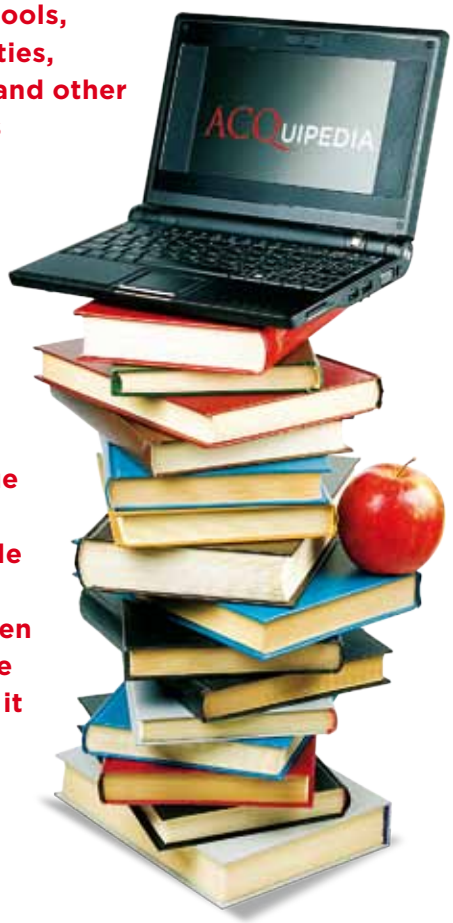

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A Disruptive Game Changer to Achieve DoD Austerity

Don O'Neill

Deputy Secretary of Defense Ashton Carter's recent challenge to "improve tradecraft in services acquisition" as part of his Better Buying Power initiatives appears aimed at the software engineering function and the prime contractors who struggle to comply with the Recruit-Train-Retain objectives laid out in the 2008 National Defense Authorization Act. As a result, there remain unclaimed benefits and unmet needs stemming from earlier neglect.

The Challenge of Competition

One of the AT&L challenges is to promote real competition. Currently, the defense industry enterprises devote extensive resources and management attention to complying with the Capability Maturity Model Integration (CMMI). The CMMI provides structures to house and control managers. This initiative fosters a culture of compliance but not one of innovation and competitiveness. Despite a two-decade history of capability maturity model improvement, software problems continue to impact defense programs. In addition, the CMMI has not

O'Neill *served as the president of the Center for National Software Studies from 2005 to 2008. Following 27 years with IBM's Federal Systems Division, he completed a 3-year residency at Carnegie Mellon University's Software Engineering Institute under IBM's Technical Academic Career Program and has served as an SEI visiting scientist. A seasoned software engineering manager, technologist, and independent consultant, he has a bachelor of science degree in mathematics from Dickinson College in Carlisle, Pa.*

kept pace with contemporary issues, such as cybersecurity, global supply-chain management, and team innovation management. Earlier, the CMM and CMMI led from the front and were viewed as necessary and sufficient. Today, the CMMI is a lagging indicator that is viewed as necessary but not sufficient. Competition and innovation, like process improvement, demand continuous improvement.

Instead of being content with compliance, these defense industry enterprises should strive to achieve global software competitiveness characterized by controlling the supplier, controlling the customer, controlling the competition, and controlling threat events.

- Supplier control is achieved by establishing an attractive workplace culture, achieving maturity in process and skills, deepening industry relationships, and retaining personnel.
- Customer control is achieved by deepening customer relationships, balancing business factors, and achieving total customer satisfaction.
- Competitor control is achieved by deepening community relationships, fielding superior products, and setting the direction for the niche.
- Event threat control is achieved by guarding against government intrusion, applying strategic software management, performing due diligence, and understanding reality.

Operationally, the stages of competitiveness include make and sell, sense and respond, and anticipate and lead.

- In *make and sell*, the goals are to achieve process efficiency and deliver quality products. This is the current state to which the defense industry aspires.
- In *sense and respond,* the goals are to listen to the voice of the customer and to deliver satisfying solutions. Too often this is a failed state.

To borrow criteria from the USPTO, innovation involves applying creativity and inventiveness in ways that are novel, useful, and a non-obvious extension of prior art.

- In *anticipate and lead,* the goals are to understand the deep needs of the customer and to deliver transforming innovations. This represents the game changing state to which defense industry enterprises need to aspire and for which the Department of Defense needs to structure incentives to achieve.

The Challenge of Innovation

Another of the AT&L challenges mentioned incentives for innovation. William Brody, former president of Johns Hopkins University, said, "The calculus of innovation is really quite simple: knowledge drives innovation, innovation drives productivity, productivity drives our economic growth." Innovation occurs at the intersection of invention and insight. It is not just something new; it is not just the inventiveness. To borrow criteria from the USPTO, innovation involves applying creativity and inventiveness in ways that are novel, useful, and a non-obvious extension of prior art.

How is innovation achieved? An organization can get lucky or it can be good. In getting lucky, ideas originate from the producer, and changes are directional—that is, moving in the direction the producer is already traveling. In being good, ideas originate in the cross-discipline collaboration and culture clash between producer and consumer, and changes are intersectional, that is, moving in a new direction under the combined influence of both producer and consumer. These changes are transformational.

Since software is the carrier for innovation, an unmet need involves systematically sparking intersectional ideas between systems engineers and software engineers. However, traditional program culture, organizational structures, and supply chain management practices erect barriers and obstacles that interfere with this opportunity. As noted earlier, one of these barriers is an excessive culture of compliance.

The Challenge of Fixed Price

The Department of Defense needs to ensure that defense industry senior executives are committed to meeting the AT&L challenges and are accountable for demonstrating game-changing progress towards solving these challenges.

For example, the most significant game changer a defense industry senior executive can deliver is an "all in" commitment to accept fixed price contracts on large software-intensive programs along with a convincing capability to deliver that reflecting an understanding of the cultural changes required. This self-medicating measure requires that both the Department of Defense and the defense industry populate a tool kit of capabilities for successfully engaging in fixed price contracts and for evaluating the challenges and benefits of doing so.

Reluctance to accept fixed price contracts within the defense industry community is based on risk and fear of failure in cost, schedule, and quality performance. This reluctance can be offset by DoD incentives based on technical performance measures designed to tilt the risk calculation in favor of fixed price for those capable of delivering.

GPS: A Fixed Price Success

An example of how a fixed price contract can result in a win-win outcome was turned in by IBM's Federal Systems Division performance on the Global Positioning System (GPS) Ground Station, a $150 million fixed price program. GPS is a high assurance real-time system that provides continuous and accurate positioning information to properly equipped users. So naturally, incentives were tied to achieving accuracy of results and a high availability operation.

As the IBM FSD software development manager for GPS, I managed a team of 70 software engineers who produced the system of 500,000 source lines of code. I experienced firsthand the challenges and benefits that come with a fixed price contract.

- The first challenge was to convince John Akers, the president of IBM, that we could successfully perform a sizable fixed price contract. A comprehensive set of technical performance measurement incentives organized around the accuracy of results was instrumental in securing that approval.

- The second challenge was the commitment to systems engineering and software engineering collaboration needed to obtain the deepest possible user domain awareness. This was done through early operations analysis and simulation in order to integrate the needs of the systems, software, and user in the best possible way. Every eyeball was trained on accuracy and high availability incentives.

- The third challenge was to structure the software development plan as an incremental development, with four well-specified design levels, each with fine-grained cost accounts, formal software inspections of design-level artifacts, careful management and visibility of systems-engineering "to be determined" items, and a relentless focus on the innovation needed to meet or exceed the accuracy incentives. Designs were recorded in a program design language, and by the end of design, level 4 represented a 1:4 ratio of design language to estimated sources lines of code. Design levels

1 and 2 supported the systems engineering preliminary design review (PDR), with intended functions of components, interface specifications, and software architecture rules of construction; design levels 3 and 4 comprised the basis for the software engineering critical design review (CDR) with provably correct, stepwise refined elaborations of functionality.

- The fourth challenge was to apply strict accountability and control of cost accounts and work packages based on a work breakdown structure and work responsibility matrix. Cross-charging was prohibited—that is, systems engineers were prohibited from charging software engineering work packages. Work packages were opened only when the entry gates had been either met or waived by explicit decision. Work packages were closed only when and as soon as the work package had achieved 100 percent earned value, so that unexpended funds in completed work packages were not used to offset work packages that were over budget. An estimate to complete (ETC) was made for each work package each month. Where actuals to date combined with the ETC for a work package exceeded the budget at completion (BAC), a corrective action plan was initiated, if possible.

Software Doctrine

The preferred organization software doctrine for large-scale, software-intensive systems development on fixed price contracts features the following tenets. Table 1 shows the fixed price doctrine tenets and their focus on project management, process management, and product engineering.

Table 1. Fixed Price Doctrine Tenets

Fixed Price Doctrine Tenets	Project Management	Process Management	Product Engineering
Requirements and incentives known from the beginning			■
Software engineering reports directly to the program manager	■		
Commitment to the deepest possible domain awareness			■
Explicit project goals and readiness to perform and deliver	■	■	■
Strict cost accountability based on work responsibility matrix	■	■	
Software development planning based on design levels and staged increments	■	■	■
Software product release frequency planned, managed, and controlled	■	■	■
Joint team innovation management of ideas generated, selected, and used	■	■	■

DoD must now impose austerity on the defense industry by requiring, demanding, and expecting the defense industry to accept fixed price contracting and by supplying incentives as the lubricant for its acceptance.

- Requirements and the technical performance incentives for their achievements are fully known at the beginning and managed and controlled throughout the life cycle.
- The software engineering organization reports directly to the program manager.
- Both the systems engineering and software engineering functions are jointly committed to obtain the deepest possible user domain awareness.
- Project goals for schedule, cost, and quality are explicitly stated and matched by both the readiness to perform and actual performance.
- Strict accountability and control of cost accounts and work packages are applied based on a work breakdown structure and work responsibility matrix.
- Software development planning is based on multiple design levels and staged incremental deliveries.
- The frequency of software product releases is planned, managed, and controlled.
- Joint systems engineering and software engineering team innovation management results in new ideas that are generated, selected, and used in new product releases.

Conclusion

Commercial enterprises are finding ways to do more with less. DoD must do the same. Austerity has been imposed on DoD. DoD must now impose austerity on the defense industry by requiring, demanding, and expecting the defense industry to accept fixed price contracting and by supplying incentives as the lubricant for its acceptance. Improved competitiveness and innovation are the outcomes sought. Accomplishing this is essential to the sustainability of the defense software industry.

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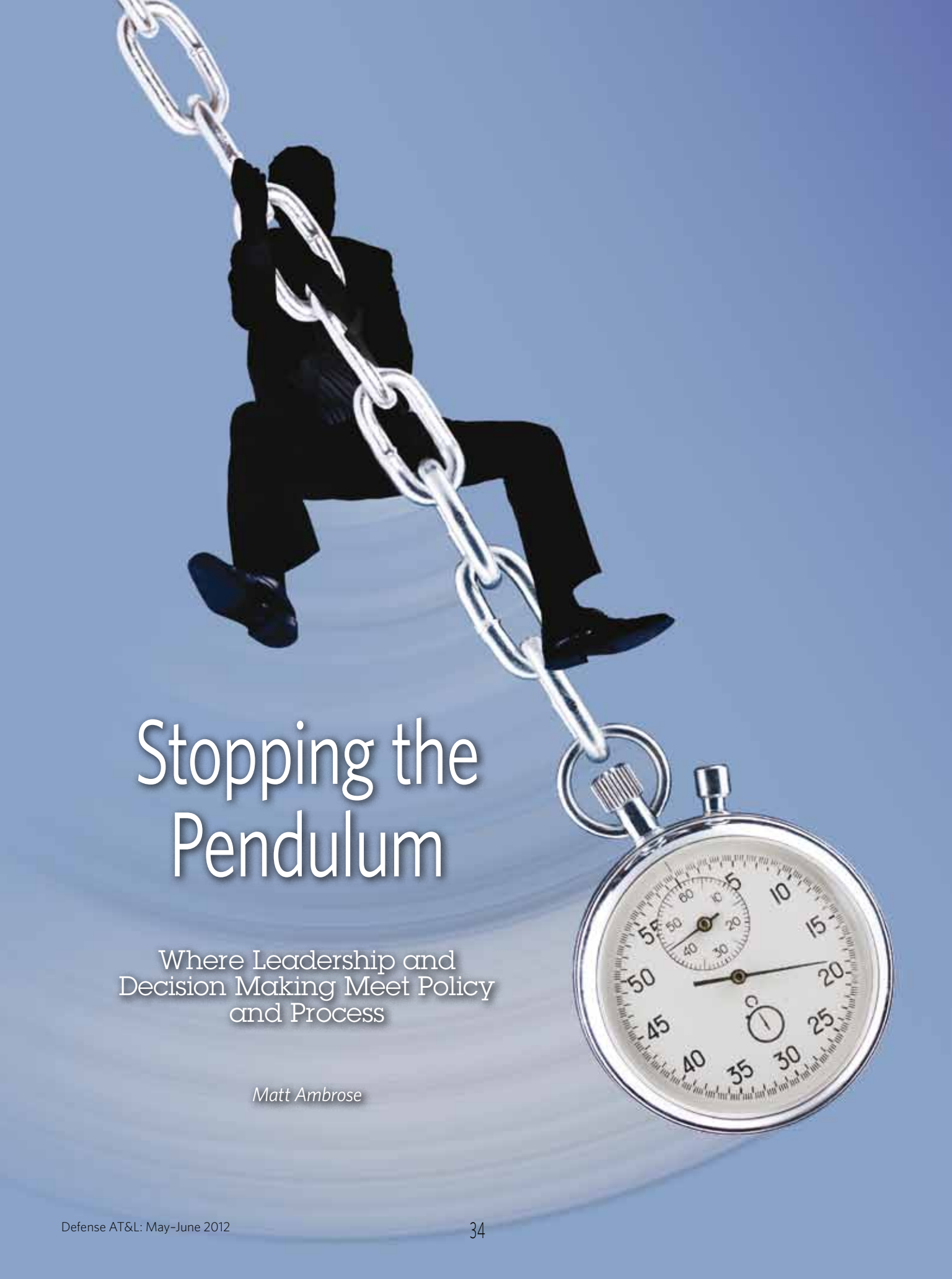

Stopping the Pendulum

Where Leadership and Decision Making Meet Policy and Process

Matt Ambrose

f you have been in the DoD acquisition business for any significant length of time, you have seen a number of policy swings that seem to go from one extreme to the other. The leaders who make policy have good reasons, but if you don't use some reason in applying policy, you will be along for the ride instead of driving decisions in your area of responsibility. One of my colleagues is fond of the saying "Every program is like a snowflake." They are all different. Chances are that the policy

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you are considering was not written with your particular situation or program in mind. Blindly applied, it could do more harm than good. Wherever the pendulum is right now, you need to apply your expertise and knowledge of your program to put it where it needs to be and stop it right there. What you don't want to do is blindly substitute policy and process for solid decision making and leadership.

I am not advocating throwing process or policy out the window but, rather, doing enough thoughtful analysis based on the facts to intelligently apply what makes sense. The warfighters and the taxpayers deserve no less. The system we use is fairly well represented by the Integrated Lifecycle Chart, which some blogger online mistakenly called "The Worst PowerPoint Chart Ever." At first glance, it looks complicated. An in-depth look proves it's even more complicated than it looks. The multitude of boxes, triangles, diamonds, and other shapes represent something important and good in defense acquisition. Without knowledge of why that thing is important and how it applies to your program or job, you can end up doing exactly the wrong thing for the right reasons.

One good example is full-up, system-level live fire test and evaluation (LFT&E), a statutory requirement for defense acquisition programs. Full-up LFT&E is a very good thing. It's an indicator of whether the system will adequately protect its occupants, and/or whether the weapons on the system are sufficiently lethal. That said, system-level LFT&E for survivability can be prohibitively expensive and destructive. You can get a waiver even from this statutory requirement if it makes sense for your program. This waiver must be approved at milestone B. Without a good understanding of the purposes and rules surrounding LFT&E, you could easily set your program up for some unneeded and very expensive downstream testing. The defense acquisition system is full of decisions like this, that have serious future consequences. Even statutory requirements are often waivable so the better you understand the rules, the better you will be able use the flexibility that you have.

To specify or not to specify is another good policy question. Do you require a contractor to build to a detailed tightly controlled specification, or give them complete freedom to come up with innovative solutions to a performance requirement? The pendulum has swung in both directions over time. The answer is not simple. What really is right for your program? If you are developing electronics for a satellite, there are very specific proven methods and materials used for making circuit cards that will work reliably in that environment. Careful consideration of risk would likely lead to using a detailed specification in that case. What if you are trying to satisfy a requirement where many methods may work but none are proven? An open performance objective with incentives rewarding better performance and lower cost would likely produce better results than a detailed specification.

Contract type for development work is also an area in which the policy pendulum has swung significantly. After some ugly experiences with fixed price development contracts there was a time when you had to get a waiver to use anything other than cost plus type contracts for development work. Now, according to the 2007 National Defense Authorization Act, the preference for engineering and manufacturing development (EMD) contracts at milestone B is a fixed price incentive contract. The important thing to realize is that this is a starting point, not necessarily the correct contract type for your program. If your program has gone through system level competitive prototyping and a preliminary design review (PDR) prior to milestone B, you probably have reduced the risk enough to use a fixed price contract. If you have only proved out component technologies and have significant integration work remaining, a cost-plus contract is worth considering. Another argument may be that a cost-type contract will promote more meaningful competition. Through pre-solicitation communication with industry, you can get an idea of how many companies would be willing to bid on a cost type contract versus a fixed price contract. Better competition for the contract will help reduce overall program risk. Bottom line, the contract type should be based on a good understanding of the remaining risk in the program. It should equitably share that risk with the contractor in a way that motivates both government and industry to save money.

Speaking of competition, this is another area of emphasis that seems to come and go. If you have read the Better Buying Power initiatives you know there is currently a great deal of emphasis on having real competition throughout the acquisition lifecycle. Competition can be a very good thing. Used properly it drives down costs and technical risk. It's as American as baseball and hotdogs. It does not, however, apply in every situation. There is still a process to get a justification and authorization for other than full and open competition if you do the homework and make a strong case for your decision. In most cases competition is the right way to go but you have to apply it with a long-term program view in mind to make it work meaningfully. If you come to a production contract with a competitive contracting strategy but without a solid build-to data package, the only contractor in the competition will be the developer. To make the competition meaningful the development contract has to include the data package as a deliverable. Thus the early decisions and actions on a program are vitally important to providing capability to our troops. Somebody much smarter than me once said programs fail at the beginning; we just find out at the end.

The Weapon System Acquisition Reform Act (WSARA) requires major defense acquisition programs (MDAPs) to conduct competitive prototyping to mature critical system technologies in the technology development (TD) phase. In other words, you will need to have more than one contractor on contract to build and test prototypes that prove out the technology. If that sounds expensive, you are right on track. Rustling up that much funding for a program in its infancy through the PPBE process in time for milestone A is going to be a real challenge. The MDA, however, has the flexibility to

Years ago contractor logistics support (CLS) was all the rage, after all who can better support a system than the contractor who built it? Now, all you have to do is mention the term CLS to see logisticians start twitching like Commissioner Dreyfus at the mention of Inspector Clouseau.

waive this requirement if you can make the business case that the costs of competitive prototyping outweigh both the short- and long-term benefits. Another proven successful approach is to take advantage of work already being done by the science and technology community in a competitive environment. If a research lab is already paying for the competitive prototyping, some careful coordination to add the needed programmatic requirements could significantly reduce the bill to the taxpayer and the program cycle time. By knowing where waivers are available and what work is ongoing, we can make a case for what really makes sense to get things done quickly for a reasonable cost. The key is making sense of your approach for your MDA so that they have a solid rationale to justify the right call.

What do you do when policies seem contradictory? Among the Better Buying Power initiatives are two that I must admit had me scratching my head when I considered both together. We are supposed to promote real competition throughout the program and also set shorter program timelines and manage to them. Source selection takes time. Depending on the size of the program, a competitive source selection could take months or years during which not a lot of work is being done to get the warfighters what they need. However, there are ways to reduce the time source selection takes. Robust communication with industry during development of the source selection plan and request for proposal will go a long way toward making the process both meaningful and faster. Another idea, which is now an expected business practice, is to get your acquisition strategy approved early. The Improving Milestone Process Effectiveness memorandum from Under Secretary Frank Kendall gives the details of what is expected at the Pre-EMD Review. This decision point will allow release of a final RFP about 6 months prior to Milestone B to jumpstart the course selection process. It takes a lot of work to put together a good coherent acquisition strategy early but it will pay great dividends in terms of schedule.

"Early" is a word we like to use a lot in this business. As mentioned before, early decisions in a program's life cycle tend to have large downstream consequences. Nowhere is this truer than in life cycle logistics. Most of the life cycle cost of a program is incurred in the operations and support (O&S) phase. It stands to reason we should be designing and building reliable and maintainable systems from the very beginning of the program. The problem is that it's hard to get near-term money to save far-term money—especially if you don't have that mindset and build those things into your program budget from the start. DTM 11-003 directs program managers to formulate a "comprehensive reliability and maintainability (R&M) program." If you haven't considered this in the context of your overall program, you will get a chance to talk about it at your next milestone review.

Reliability and maintainability have to be considered in the context of your program's comprehensive life cycle support strategy. Years ago, contractor logistics support (CLS) was all the rage. After all, who can better support a system than the contractor who built it? Now, all you have to do is mention the term CLS to see logisticians start twitching like Commissioner Dreyfus at the mention of Inspector Clouseau. CLS basically handed most of the support tasks to the contractor and paid them for each maintenance action, part, etc. It doesn't take much imagination to see how that sort of arrangement leads to buying lots of parts and maintenance actions, leading to higher cost and more downtime. The current policy is to use performance-based agreements in the context of a comprehensive life cycle support strategy known as performance based logistics (PBL). PBL does not equal CLS. In fact, PBL turns the CLS incentive on its head by incentivizing fewer maintenance actions, fewer parts, and more up time for the warfighter. PBL also emphasizes getting the right mix of support from government agencies and contractors while encouraging public/private partnerships. The key to making PBL work for the warfighter is picking the right metrics for your contracts and government-to-government agreements. This takes real knowledge of your program and the warfighters' requirements, as well as a flexible contracting officer. You have to do your homework and make sure the outcome of the incentive, such as higher mean time between failures, will be what the user needs and drive support costs down. Once again, you have to look hard at cost and performance trades and make sure

the business case for what you are doing is solid. If you offer the contractor more profit for a more reliable part, will the result be a savings in support costs, better reliability, and an overall win-win situation? The answer requires good analysis and close coordination with the warfighter. Trying to paste PBL on at the end of a program is probably the wrong approach. What is required is careful planning based on the design and support requirements from program inception.

Yes, this is a complex and sometimes frustrating business—so pack along your sense of humor. Just remember that policy and process are no substitute for leadership and critical thinking. In part, the reason the process is so complex is that our forefathers deliberately set up competing responsibilities between the executive and legislative branches in our Constitution. Railing against or reforming the process hasn't produced much in the way of tangible results. Knowing the process, especially where to find the flexibility to go outside of it, is essential to success.

Striking the right balance of outside- and inside-the-process thinking is also very important. All of us can recall leaders who were on either end of the spectrum of process and results. There is the stickler who follows every regulation to the last period, which results in a lot of administration and very little else getting done. At the other end is the "loose cannon" on deck who is a danger to himself and anyone nearby, because he ignores necessary procedure, and to perdition with the consequences. Somewhere in the middle is effective leadership and decision making. Careful consideration of consequences and informed risk taking by process-smart leaders is the effective way to navigate the defense acquisition system. You can and should be as results-oriented as possible in your role as an acquisition professional, but you are unlikely to get the results the users need on the battlefield without being well-versed in policy and process. Use the process, but don't let it use you or your program. There is a real tension between compliance with the reams of policy and regulation and efficiently getting capability in warfighters' hands. I would argue that every one of those policies and regulations contains benefit for both the taxpayers and our military. You ignore any of it at your program's peril. If you apply every bit of policy without thought, however, "efficient" will not be the adjective that describes your program.

So where will you stop the pendulum? Somewhere in your sphere of responsibility and influence, there are decisions to be made. Do you know the system, your program, and your contractor well enough to make good decisions that consider both the short- and long-term consequences? No matter where current policy lies, you almost always have the flexibility to propose a different answer if you can explain and support your position. Use that flexibility to turn the pendulum into a plumbline that points to the best solution for the country—and for our men and women in uniform.

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Where Can You Get the Latest on the **Better Buying Power** Initiatives?

- BBP Gateway (**https://dap.dau.mil/bbp**) is your source for the latest information, guidance, and directives on better buying power in defense acquisition
- BBP Public Site (**https://acc.dau.mil/bbp**) is your forum to share BBP knowledge and experience

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You'll find the DAU 2012 Catalog at www.dau.mil. Once you've chosen your courses, it's quick and easy to register online. Or contact DAU Student Services toll free at 888-284-4906 or student.services@dau.mil, and we'll help you structure an educational program to meet your needs. DAU also offers fee-for-service consulting and research programs.

DAU

Transforming Defense Supply-Support Processes on Strategic Submarines

Improving Operational Availability and Reducing Costs

Nelson Garcia ■ *Paul Sparano*

Operational availability is the basic readiness requirement for a weapon system and is the base requirement that all development disciplines and system design must be adjusted to meet. It is the most critical requirement of a system acquisition program. Supply support is a major contributor to any end item's operational availability. It is one of the 12 integrated product support (IPS) elements and is the availability of organizational-, intermediate-, and depot-level repair parts, insurance spares, and replenishment parts in the supply system. Supply support includes the development of technical documentation that identifies the parts required to support the mainte-

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U.S. NAVY

nance philosophy. The transformation of some supply-support processes for strategic submarines can improve their operational availability and reduce costs.

The U.S. Navy Supply Information Chain

For decades, the approach to business process improvement in the Navy Supply System has been to automate existing business processes. This has not always worked efficiently when the business processes automated were designed to process data flows in a pre-computing era. Hence, data flows in today's Navy Supply System tend to follow the same workflow path as when paper forms were used in the pre-computing days.

Onboard data necessary to support logistics operations on U.S. Navy ships and submarines consists of equipment configuration management, maintenance, and inventory management data. Most of this data is produced and maintained ashore. Therefore, ships do not own most of the data resident in the onboard logistics information systems that they are responsible for maintaining. These ship's logistics information systems are the product of integration and reproduction of master shore-based databases, and their purpose is almost entirely for transaction support such as generating work orders and requisitions. Because of antiquated replication processes, latency created by the distribution methodology, and delays in personnel interaction, it is probable that a common piece of information, such as a catalog record for a repair part, can exhibit a different set of attributes on every ship. Because of this, a considerable amount of resources and effort are spent ensuring that shipboard data is reconciled and synchronized with ashore databases.

A gradual approach and automation for the sake of automation are not what the Services want or need, and this is reflected in recent, some would say monumental, efforts to upgrade the logistics infrastructure by implementing commercial Enterprise Resource Planning (ERP) systems.

Current Afloat Logistics Support Models

Traditional Multi-Echelon, Distributed Data Model

The traditional supply chain information model that has been in use by the Navy Supply System since the days before automation was commonplace, is a multi-echelon model consisting of shipboard systems, an intermediate support infrastructure, and an enterprise (wholesale or "system") infrastructure. The afloat model may use one or several shipboard systems for technical documentation management, another for maintenance management, and yet another system for supply and financial management. These transactional systems are based on data or hardcopy data products that are nothing more than replicas of data in master systems ashore. The output from these shipboard systems consists of transactions. As a result of this distributed data model philosophy, shipboard logistics data products are rarely a perfect reflection of the true ashore/centralized product. Furthermore, the effort to improve the data is driven down to the lowest echelon, where there is more data, less expertise, and less available resources.

Today, the Navy Supply System is undergoing significant transformation by adapting and implementing a commercial ERP system for financial management and supply management that will enable standardization of processes across the Navy enterprise. However, these enterprise initiatives still leave the shipboard systems essentially intact and subject to the same data distribution schemes as in the legacy framework.

Strategic submarines use additional information systems for strategic weapons system (SWS) logistics support. The SWS Maintenance Information Network (SWSMIN) is the automated, self-contained, mission-essential platform used to provide this support. SWSMIN does not directly interface with tactical systems and includes applications that provide a platform for interactive electronic technical manuals (IETMs) and coordinate the flow of maintenance information between the Trident ballistic missile submarines (SSBNs) and shore facilities. Within SWSMIN, Maintenance Applications (MA) is the computerized maintenance management system for SWS, and includes modules for Preventive Maintenance Management Program (PMMP), SWS Coordinated Shipboard Allowance List (COSAL), parts substitution, and parts requisition. However, SWS onboard spare parts are managed separately in Relational Supply (R-Supply), which acts as the single inventory management system afloat for Trident submarines. This means that SWS COSAL data must be replicated and synchronized not only between ashore and afloat systems but also between the two afloat maintenance systems (Organizational Maintenance Management System-Next Generation [OMMS-NG] and MA) in order to facilitate functionality required by both systems in order to generate repair parts requisitions. Therefore, sailors conducting SWS maintenance must interface with two systems and duplicate some work in order to obtain parts support for SWS subsystems.

Distance Support

In recent years, the Navy has begun implementing some engineered business process changes to go along with technological advances in information technology by incorporating distance-support concepts in the logistics support framework. Notwithstanding some issues such as bandwidth that need to be improved, Distance Support Afloat is considered an essential enabler for the transformation of the future Navy. However, these distance support initiatives can only provide access to centralized support and bring more information to the ship rather than true shipboard process reconceptualization.

The Littoral Combat Ship (LCS) Model

The LCS logistics support concept of operations fully embraces and implements a distance support model in order to enable labor and crew reductions afloat. To reduce workload and manning requirements on board LCSs, the Navy has implemented a full-service shore-based logistics and maintenance support infrastructure for the LCS platform. The shore-based logistics infrastructure includes a Maritime Support Detachment (MSD) and personnel at the LCS Class Squadron, who

act as the single point of entry for repair, logistics, and personnel support for every ship in the class.

Conceptual SSBN SWS Model

SSBN Shipboard System Integration (SSI). The Trident Program provides the foremost strategic deterrent for United States national security and is the Navy's highest priority weapons program. The Trident system consists of the Ohio Class submarines, their associated weapons systems, an integrated logistics support system, ship systems and equipment, and dedicated Trident activities such as bases, training sites, and maintenance facilities. The Trident program has adopted an SWS integrated systems development approach known as SSI. Each individual SWS subsystem is managed by a separate technical branch and its respective prime contractors. This arrangement, although sound from a systems engineering perspective, requires careful and painstaking coordination of subsystem upgrades as well as logistics support. The SSI approach is an effort to re-baseline the shipboard subsystems in order to achieve efficiencies in lifecycle management of the SWS.

Removing Supply Chain Management Burden Afloat. The proposed vision for supporting the SSBN SWS platform can be described by an oversimplified analogy of the hotel minibar or supermarket self-checkout, wherein material is dedicated and available to a customer, a usage transaction takes place, and the system works behind the scenes to document, record, and restore the inventory to a specified level of support. To achieve this level of support for SWS on board SSBNs, several key objectives must be achieved: integration of supply, maintenance, and technical documentation systems; transfer of supply-support functions ashore; eliminating requirements for duplicative administrative and logistics systems afloat; and custodial responsibility for SWS spares assigned to the customer department (the end user).

The ultimate vision of the future SWS logistics support system is to enable a sailor to respond to a maintenance event by interfacing with a procedure, checklist, or other electronic technical document. From that same interface, the sailor should be able to initiate all required maintenance and logistics functions. For example, if a step in a procedure calls for inspecting a particular component and the sailor indicates that the component needs replacement, the afloat system should automatically initiate a maintenance action and tell the sailor where the onboard repair part is located. The sailor would retrieve the spare, and the system would record its use. Once the submarine returns to port or is able to transmit or connect to the ashore system, use transactions consisting essentially of the spare part's unique identifier would be transmitted ashore, where the master data is maintained and where all supply support and inventory management is coordinated.

Shore Supply Support. Very much like the LCS model, the SWS platform would be supported by an ashore team who would perform the supply-support functions necessary to maintain the shipboard inventory and related data at a high state of readiness. These functions would include: conducting physical inventories, initiating stock replenishment, tracking and delivering direct turnover material, performing data management functions on the ashore master database, and receiving and stocking material.

Because of antiquated replication processes, latency created by the distribution methodology, and delays in personnel interaction, it is probable that a common piece of information, such as a catalog record for a repair part, can exhibit a different set of attributes on every ship.

Many of the functions that would be assigned to the ashore team are traditionally conducted by the shipboard supply department. This transfer of functions would reduce workload afloat and enable additional efficiencies and improvement opportunities without additional bandwidth or persistent connectivity. Additionally, planned maintenance actions for post-patrol refit and for subsequent patrol could be more efficiently initiated ashore either by the ashore team or the off-crew even while the boat is at sea. (SSBNs have two crews: blue and gold.)

Integration of Supply, Maintenance, and Documentation. A key aspect of the conceptual SWS support model is the functional integration of supply, maintenance, and technical documentation. The system concept calls for ensuring that the content in electronic technical documents follows prescribed standards for referencing supply data that could be easily related to inventory and maintenance records. There would be no need for an interactive inventory management application afloat, because inventory-related data would be provided behind the scenes to the maintenance interface. When a sailor interacts with an electronic document, user-generated events (mouse click, keystroke, etc.) would trigger service requests to the maintenance service or the inventory service as necessary, and the sailor would not be required to have any knowledge of supply functions or procedures. Here are some example scenarios:

- A sailor reading an electronic document clicks or highlights a part number. The system generates a service request (behind the scenes) to the inventory service to display material availability as well as to prompt the user whether a maintenance action should be initiated.
- A sailor initiates a maintenance action from an electronic procedure. The maintenance management system automatically records the associated procedure, equipment, and status to record the maintenance accomplished. Any subsequent material requirements identified by the user while in this procedure are added to the maintenance action's "shopping cart."
- The ashore team receives a defective material summary (DMS) report indicating that a specific repair part made by a specific manufacturer is defective and not ready for issue. Since each SWS spare part would be uniquely identified, with pedigree data recorded in the master ashore system, the ashore team is able to identify all impacted submarines and the location of all associated spare parts. Additionally, the ashore team is able to identify all maintenance procedures that may be affected by this material condition.

Custody of Material. If SSBNs are to achieve a self-service model afloat and maximize response time in support of SWS maintenance, access to material is a key component. Therefore, the concept calls for the customer department to maintain custody of the spares. This is possible for SWS spares, because there is only one customer. Other factors justify this from an inventory-management perspective: SWS maintainers already have custody of the most critical and expensive spares (SWS Block Modules, which are equivalent to maintenance assistance modules [MAMs]); SWS spares are already segregated from other stock; and SWS spares are low demand but pose a high inventory-management burden—so they lend themselves well to adopting this model.

Impacts and Results

Streamlining afloat logistics support systems for SWS into a single, integrated system would improve efficiency and reduce both workload afloat and the need for extensive data reconciliation and management efforts ashore. Additionally, R-Supply and OMMS-NG would not need to incur high design and development costs to provide SWS-unique functionality to a very small number of platforms. This also eliminates the costs for continuous management of SWS-related trouble reports, change proposals, and associated testing. Furthermore, minimization of logistics delay afloat will produce an increase in operational availability for all supported systems.

Implementation of this concept would reduce supply-department workload by eliminating inventory management burden for SWS. This includes stock replenishment, physical inventories, COSAL maintenance, and tracking of outstanding requisitions, receipts, and issues.

This model would also enable consistent and more efficient SWS supply support for all SSBNs. An SSBN crew's manning of logistics specialists (LSs) is similar to that of a fast-attack submarine (SSN). However, an SSBN crew of LSs and its supply officer today are required to manage vastly more inventory and configuration records due to SWS and receive no specialized training on SWS via their training pipeline. Efforts to improve training are currently under way. Implementing this new model would enable truly transferrable skills between SSN and SSBN LSs, alleviate the need for additional training afloat, and enable SSBN LSs to concentrate in supporting the rest of the platform.

User-generated events (mouse click, keystroke, etc.) would trigger service requests to the maintenance service or the inventory service as necessary, and the sailor would not be required to have any knowledge of supply functions or procedures.

Conclusion and Recommendations

Innovative and cost-effective integrated product support strategies that result in the most effective supply-support processes are the overarching goals of logisticians and engineers. Transforming supply-support processes, some of which were discussed in this article, can help result in the most effective supply-support system, improving operational availability and reducing costs. In an era where defense—including strategic submarines, budgets, and manpower—is austere, and where some Navy force materiel readiness is already in decline, transforming some supply-support processes that save effort, time, and money while increasing operational availability is not an option but a mandate. Any supply-support process transformation and value-added innovations to improve operational availability must consider costs, manpower, and impact on the strategic submarines and their crews, including maintenance requirements, training, time demands, and operations.

Logisticians and support organizations are doing a lot to improve processes and streamline logistics support infrastructure. Now is the time for program managers and operational commanders to promote change by requiring that systems adapt to support and enhance their operational mission—while reducing their costs.

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DAU Mission Assistance

A Less-Familiar Tool In the Acquisition Tool Kit

John Higbee ■ Duane Mallicoat ■ Rob Tremaine ■ Tom VandenBerg

Today's acquisition environment is complex. Aside from the many technical challenges associated with developing new capabilities, shrinking DoD budgets are creating extraordinary acquisition pressures. Not surprisingly, these shrinking budgets demand a program manager's constant vigilance. Add this to the challenges of maturing and fielding tomorrow's technology in parallel with dynamic statute, policy, and process changes, and it's easy to see why a program manager (PM) assignment is one of the most challenging jobs in the Defense Acquisition Workforce.

The ability to bring in the right support to help address specific complex program challenges facing today's PMs can be an invaluable asset to a program office team. So are there any secret formulas available to PMs to help them combat some of these foreboding eventualities? While not a secret, leveraging DAU's Mission Assistance product line gives PMs access to a greater body of knowledge and expertise and can ultimately strengthen a PM's formula for success.

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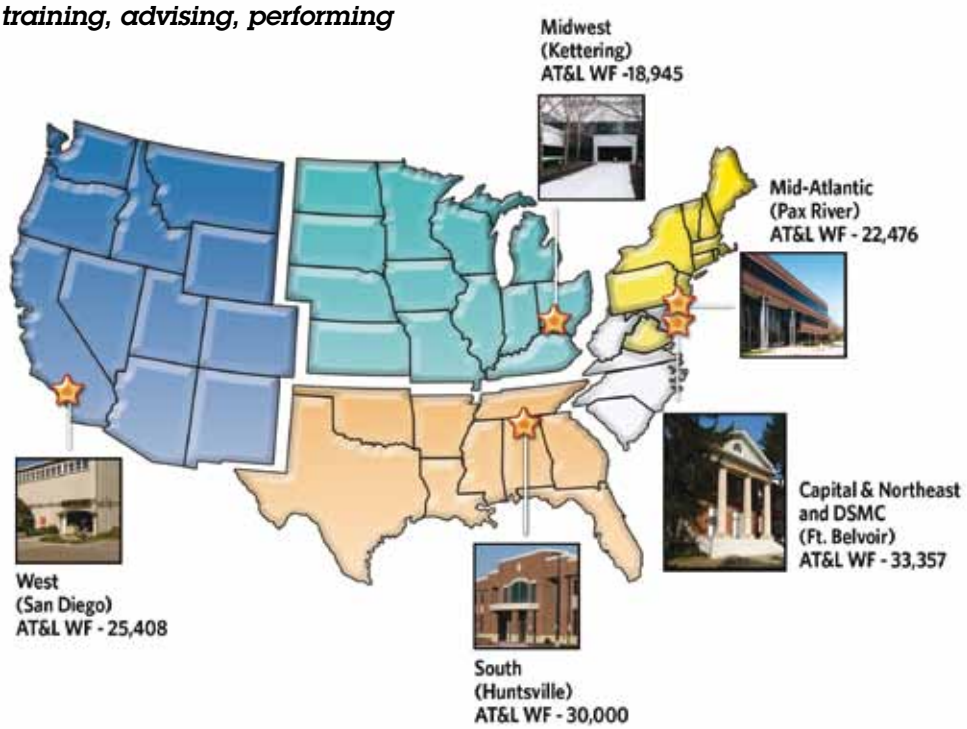
For PMs considering this less-familiar tool, the question immediately comes to mind, "What practical benefit can my organization expect from working with DAU Mission Assistance?"

The answer is straightforward. DAU is positioned to assist DoD acquisition program organizations facing cost, schedule, and performance hurdles. DAU's Mission Assistance capability was designed to help PMs and others tackle the tough acquisition challenges they will encounter. DAU faculty includes subject-matter experts (SMEs) across all functional areas, who have collectively worked in every acquisition phase, in every acquisition product line, in industry, and in every military component. With this cadre of seasoned acquisition experts bringing varied backgrounds and extensive experiences to the table, valuable acquisition insights are at the PM's disposal.

Figure 1. DAU Regional Orientation

We are part of the acquisition community with global outreach—training, advising, performing



Located with Our Customers

Why the Changing Federal Environment Makes Mission Assistance More Useful Than Ever

The federal government and DoD fiscal environments are radically changing. The "flat" economic recovery from the 2008 recession and sustained high unemployment have resulted in budgetary reductions, with the prospect of larger reductions in the near future. Renewed emphasis on deficit reduction will only accelerate this trend. Historically, major DoD budget cuts have usually been taken first in acquisition accounts.

Congress's recent acquisition legislation—the Weapons System Acquisition Reform Act (WSARA) of 2009, and the Implementing Management for Performance and Related Reforms to Obtain Value in Every Acquisition Act (IMPROVE) Acquisition Act of 2011—has been informed by these drivers. Both acts task DoD acquirers to improve performance in multiple areas.

DoD leadership started early to proactively address these "sea changes." Deputy Secretary of Defense Ashton Carter, Ph.D., in his former role as under secretary of Defense for Acquisition, Technology, and Logistics, issued a series of Better Buying Power initiatives that challenged the Defense Acquisition Workforce to "do more without more." These initiatives articulate strategic and tactical guidance on how the DoD acquisition enterprise can help deliver better value while improving acquisition execution. (Note: these "efficiency initiatives" continue to evolve, so those seeking the latest information on them are encouraged to view the Acquisition Community Connection's Better Buying Power public website [https://acc.dau.mil/initiatives]. In addition, each DAU region can provide direct BBP mission assistance).

As a result of these environmental changes, DoD acquisitions are under more scrutiny than ever before. Inarguably, PMs are still expected to deliver specified capability to the warfighter within allocated resources, via flexible and executable alternatives, despite the environmental/fiscal turbulence. PMs who fail to address significant problems, and bring unresolved issues forward to a formal forum like a program review or Defense Acquisition Board (DAB) without thoughtful corrective "ways ahead" can quickly lose ground.

DAU's Mission Assistance can be a useful resource to test-drive a PM's alternative strategies or assist a PM in reflecting more deeply about an issue, so he or she can evaluate the best alternative while considering acquisition "best practices." Identifying problem areas while they incubate, but before they mature, gives more time to the acquisition manager to look at root causes, develop the necessary corrective actions or mitigation techniques, and ultimately influence acquisition outcomes for the better. DAU has a proven track record of providing valuable assistance in this area to a wide variety of acquisition organizations.

With this cadre of seasoned acquisition experts bringing varied backgrounds and extensive experiences to the table, valuable acquisition insights are at the PM's disposal.

DAU Mission Assistance Is Organized Around Its Workforce

To better serve its AT&L customers, DAU developed a regional customer-support strategy with campuses co-located close to key workforce locations. This construct allows DAU to provide responsive customer support to the Defense Acquisition Workforce, from training classes to specialized mission assistance.

What Types of Mission Assistance Does DAU Offer?

Specific Mission Assistance varies and can take on many forms as identified below.

Mission Assistance can be:

- A program "assist," perhaps in the form of an assessment of the health of a particular acquisition area across any aspect of its life cycle
- A dialogue on best practices and lessons learned that can benefit a program by creating more efficiencies
- An outside, objective set of eyes to look at various aspects of a program such as an acquisition strategy, source selection plan, competitive strategies, systems engineering plan, integrated schedule, incentive plan, etc.
- A review and analysis of an organization that may result in compelling insights and comprehensive recommendations
- Specialized and focused acquisition team training, covering the gamut of necessary team skills

Whatever form it takes, Mission Assistance is "not" intended to be an audit, an oversight function, an inspection, or a source of additional labor for program offices. Instead, it is a collaborative discussion between a customer and DAU regarding specific aspects of their acquisition, and stays between them and them only. It is strictly "not for attribution." This privileged communication is a fundamental tenet of DAU Mission Assistance.

DAU Mission Assistance Efforts Fall into Several Categories:

Targeted/Tailored Training includes courses/workshops that have been developed or can be customized to meet focused acquisition training and is more granular in nature. These courses can be given as is, or tailored to an individual program's needs. A complete listing of the current targeted training courses can be found in the DAU iCatalog (http://icatalog.dau.mil) or by contacting an associate dean of outreach & mission assistance (ADOMA) in the respective region.

Rapid Development Training (RDT) requires quick production and fielding of training materials in support of time urgent changes to DoD policy and acquisition initiatives. The primary goal of all RDT efforts is to have materials available (normally, via the Internet) at the same time the policy change or acquisition initiative is announced. Examples of recent RDT include DoD 5000-series changes and the changes in life cycle support policy including the creation of the program support manager (PSM). RDT for Better Buying Power was made available to the Defense Acquisition Workforce in the fall of 2011.

Consulting provides partnering assistance to individual acquisition efforts focused on a wide array of unique challenges and issues. This partnering can occur in a variety of sizes (from individual to large acquisition organizations), or formats (e.g., workshops focused on specific outcomes (including government, or government/industry teams), specialized team training to improve performance; one-on-one mentoring /coaching for individual senior acquirers, or a deep investigative dive into programmatic and/or organizational challenges).

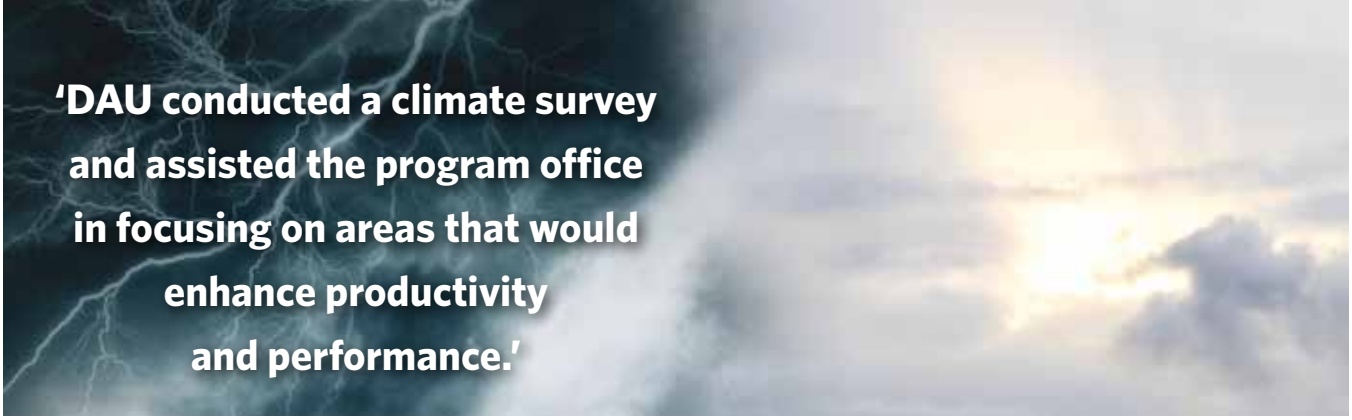
For an in-depth breakout of DAU's Mission Assistance portfolio, visit the Mission Assistance website at http://www.dau.mil/ma/default.aspx

MDAP/MAIS Mission Assistance

Major Defense Acquisition Programs (MDAPs) and Major Automated Information Systems (MAISs) face many challenges throughout their life cycle. Having an experienced "thinking partner" available to help reconcile a wide range of challenges, ranging from leadership to programmatic, has proven invaluable for many PMs and PMOs. To further aid MDAPs and MAISs, DAU established an MDAP/MAIS director to provide this capability as part of the senior leadership staff at each region and the Defense Systems College Management (DSMC).

DAU Mission Assistance Also Includes Services Acquisition Assistance

Over half of the total DoD acquisition expenditures reside in acquisition of services, and have done so for more than 10



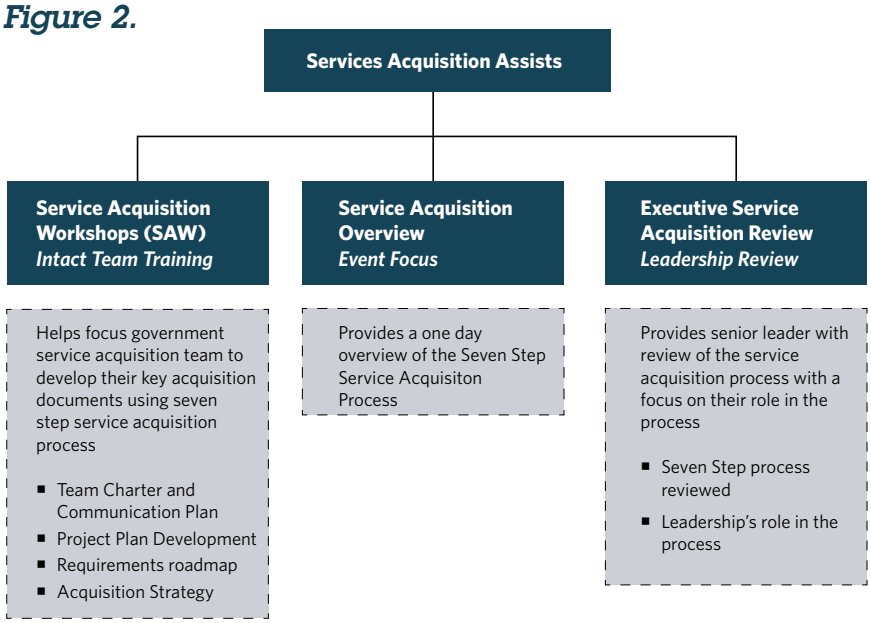
years. "Improving the Tradecraft of Services Acquisition" (a major Better Buying Power area) has become a high priority. Educating the workforce engaged in services acquisition to effectively execute this critical area is vital.

DAU developed the Services Acquisition Assist workshops to support better services acquisition execution. These workshops are designed as a just-in-time event to facilitate a specific acquisition team and its requirement. These workshops use a seven-step services acquisition process. They teach the teams, through hands on training, how to develop and execute performance-based services requirements in their specific job domains. The following diagram is an overview of the Services Acquisition Assists workshops:

Mission Assistance Customer Feedback

Like any product line, feedback is an essential component since it addresses what matters most—the customer's view. AT&L programs that have leveraged the program assist capabilities such as program start-up workshops (PSWs) or internal support to a specific task or program objective felt well prepared for their program's challenges. Following is a sampling of customer responses to DAU's recent mission assists.

Figure 2.



Mission Assistance Customer Feedback

Capt. Rick Muldoon, USN, (Ret.) Program Manager, PMA-261, CH-53 Heavy Lift Helicopters: "When I requested assistance in pulling together a command climate survey shortly after reporting on board as the PM, DAU was ready and able to jump in and make it happen. From developing the right questions for my command climate survey, to administering the online survey, through the detailed analysis of the results, DAU was there to provide their expertise and guidance, and I greatly appreciated it. DAU has also been valuable in helping us get out the message to the broader acquisition community on a couple of very successful program initiatives, which is important to the health of the DoD acquisition community."

Rear Adm. (Select) C.J. Jaynes, USN, Program Manager, PMA-213, Naval Air Traffic Management: "As a new Program Manager leading the start-up of an ACAT 1D program Joint Precision Automated Landing Systems (JPALS), I turned to DAU Mid Atlantic to guide and facilitate a program start-up workshop. The team spent 4 days together establishing ground rules, drumbeats, working relationships and aligning the government and contractor organizations to work in the most efficient manner. Eighteen months later, the Team asked for DAU to return and facilitate a follow-up workshop to help us attain the next level of performance. I was so pleased with the results that were achieved for the team that I decided to use DAU to lead the off-site for the entire program office. DAU conducted a climate survey and assisted the program office in focusing on areas that would enhance productivity and performance."

Brig. Gen. Frank Kelly: Commanding General, Marine Corps Systems Command, Quantico, Va.: "DAU's support to MARCORSYSCOM with online courses, classroom training, and mission assistance initiatives has measurably improved our individual acquisition capabilities and organizational performance. The full range of acquisition services and solutions available through DAU make them an invaluable resource and essential component of our acquisition mission."

Mike Christoff, Training & Education Specialist, Acquisition Workforce Training Office of the Chief Procurement Officer, U. S. Department of Homeland Security: "In simplest terms, the commitment of the DAU Mission Assistance team allowed the Department of Homeland Security to meet the certification training requirements for the program manager acquisition workforce through the design and development of PM Level 1, 2, and 3 courseware and by delivering superb classroom instruction to more than 2,000 students over the past 3 years."

Jimmy Bailey, C-17 Globalmaster III, Deputy Director, 564th Aircraft Sustainment Squadron, USAF: "The end result of our C-17/DAU collaboration will result in a contract being in place by the required date and a completely new government-contractor working relationship."

Ricky O. Stuart, Technology Manager, Riverine Inter-coastal Operations (RIO) Joint Capability Demonstrations (JCTD) Project, U.S. Southern Command: "DAU's expertise and facilitation turned a difficult, complicated task into an event that yielded a precise, common focus that will serve the RIO JCTD well."

Lt. Col. Keith Nowlin, Operational Manager, Joint Recovery and Distribution System Joint Capability Demonstrations (JCTD) Project, U.S. Army Combine Arms Support Command: "Just wanted to say thanks to the DAU team for facilitating a project review. DAU provided a great tool that we will use to assist us with the JCTD. This was a tremendous help and don't be surprised if we ask you to come back later in the program."

Maj. Gen. (Select) Christopher Bogdan, KC-46 Tanker Program Executive Officer and Program Director: "The PSW was a huge success from my point of view. It provided a structured forum for the leaders of our program office and other government stakeholders to meet and begin building relationships with their Boeing counterparts. It was also a superb starting point for a program of this scope and complexity. Together, with the help of DAU, the program office and Boeing were able to map out the first 180 days of the program, so we all have a common understanding of how we will move forward and operate together. I recommend all DoD programs—big or small—conduct a PSW. It is well worth the time and effort."

Col. Charles Cynamon, Air Force Space Command/Space & Missile Center, MILSATCOM Program Office: "The DAU Executive Coaching Program was critical to focusing my attention and energy toward creating a sound investment strategy for the future military satellite communications enterprise. My DAU coach collaborated with me on articulating the future vision, identifying the necessary actions, and developing an actionable plan to achieve a lasting goal. Through this program, Air Force Space Command now has an approved investment strategy for providing our warfighters with improved and affordable satellite communications capability."

Conclusion

With the radical changes in today's fiscal and acquisition environment, coupled with the sustained emphasis by Congress and other key stakeholders on improving acquisition outcomes, the DoD acquisition manager's job grows more and more challenging. DAU's Mission Assistance capability can provide rapid, knowledgeable and non-attribution support to help meet those challenges and improve acquisition outcomes. DAU's entire enterprise of acquisition experts stands ready to assist any acquisition program office, regardless of ACAT level, emphasizing collaboration and customer focus. For more information, please contact the personnel identified in the sidebar.

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TF SAFE

Protecting the Force in Iraq Against Fire and Electrical Hazards

Maj. Jason Good, USA
Capt. Sherita Howard, USAR
Sheldon Longnecker
Karen E. Marshall

Fire and electrical incidents in Iraq were at an all-time high in the summer of 2008, killing 19 people on MNF-I bases across the Iraq Joint Operations Area (IJOA). As a result, Multi-National Forces–Iraq (MNF-I) activated the Task Force Safety Actions for Fire and Electricity (TF SAFE) program in August 2008. TF SAFE's 3-year mission was to "protect the force against fire and electrical hazards in the environment we control; inside the wire on our Contingency Operating Bases, Locations, and Sites."

Under the direction of the MNF-I J4, Multi-National Corps-Iraq (MNC-I) C7, and later the USF-I J7, TF SAFE (deactivated on Nov. 12, 2011) combined the efforts of Service members, DoD civilians, and contractors from MNF-I, MNC-I, USF-I, the U.S. Army Corps of Engineers (USACE), and the Defense Contract Management Agency (DCMA) to combat the threat of fire and electrical hazards. In its 3-year history, TF SAFE reduced electrical shock

Good *(Army Acquisition Corps Officer, DCMA) served as TF SAFE chief in the USF-I J7 Directorate March–November 2011.* **Howard** *served as TF SAFE deputy chief June–November 2011 in the USF-I J7 Directorate.* **Longnecker** *(DoD fireman, Ft. Greely, Alaska) served as TF SAFE theater fire chief in the USF-I J7 Directorate October 2008–November 2011.* **Marshall** *served in TF SAFE from August 2008–November 2011 as SBH senior project manager and Versar International program manager.*

Figure 1. Shock Incident Reduction on US Bases in Iraq FY 2009–FY 2012.

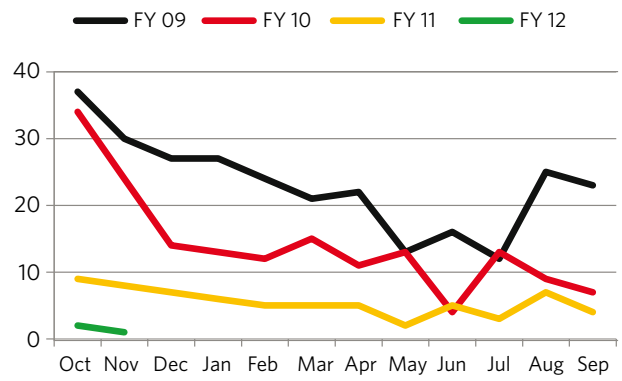
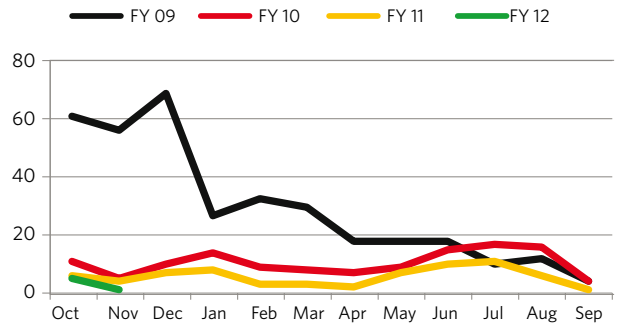


Figure 2. Electrical Fire Incident Reduction on US Bases in Iraq FY 2009–FY 2012.



incidents by over 92 percent (Fig. 1), electrical fire incidents by 94 percent (Fig. 2), and deaths due to electrocution to zero. TF SAFE accomplished these feats by conducting more than 268,000 facility electrical inspections, repairing more than 3,400 electrical defects, and conducting 99 operational readiness inspections (ORIs) of contracted fire departments.

TF SAFE Formation and Implementation

Maj. Gen. Kurt Stein recalled in 2009, "When I first got [to Iraq] a year ago [2008], I was afraid to touch any socket, I was afraid to turn my lights on ... I was afraid to take a shower." As the deputy chief of staff for MNF-I Combined Joint Staff 1/4/8, Stein played an integral role in the formation and implementation of TF SAFE. In 2008, the primary issues contributing to fire and electrical hazards were unsafe troop actions and lack of properly certified/trained personnel conducting installation and inspection of electrical equipment. In light of this, Maj. Gen. Stein directed TF SAFE to focus along three lines of effort: plans, policies and procedures (PPP), to establish operational conditions; facilities to mitigate electrical safety hazards; and awareness, to address the human factors associated with fire and electrical hazards.

Based on this guidance, TF SAFE immediately established a single Iraq-wide electrical standard for identifying, prioritizing, and repairing electrical deficiencies and established electrical inspection standard operating procedures (SOPs) based on the United States National Electric Code (NEC) versions 2005 and later 2008. The NEC and Chapter 25 of Army Regulation 420-1, *Fire Protection and Emergency Services* became the standard documents used for fire and electrical safety inspections on all U.S.-occupied facilities in Iraq.

TF SAFE also formulated a mission statement to focus its efforts on a common goal: "Task Force Safety Actions for Fire and Electricity protects the force through immediate and long-term actions to significantly reduce the risk of fire and electrical incidents throughout the IJOA." Specified tasks were added to nest with TF SAFE's mission statement; the first five directed the initial stages of formation, and the last was added in June 2011 to support the Department of State (DoS) and the Office of Security Cooperation-Iraq (OSC-I) as they constructed facilities to support the enduring mission in Iraq post-2011:

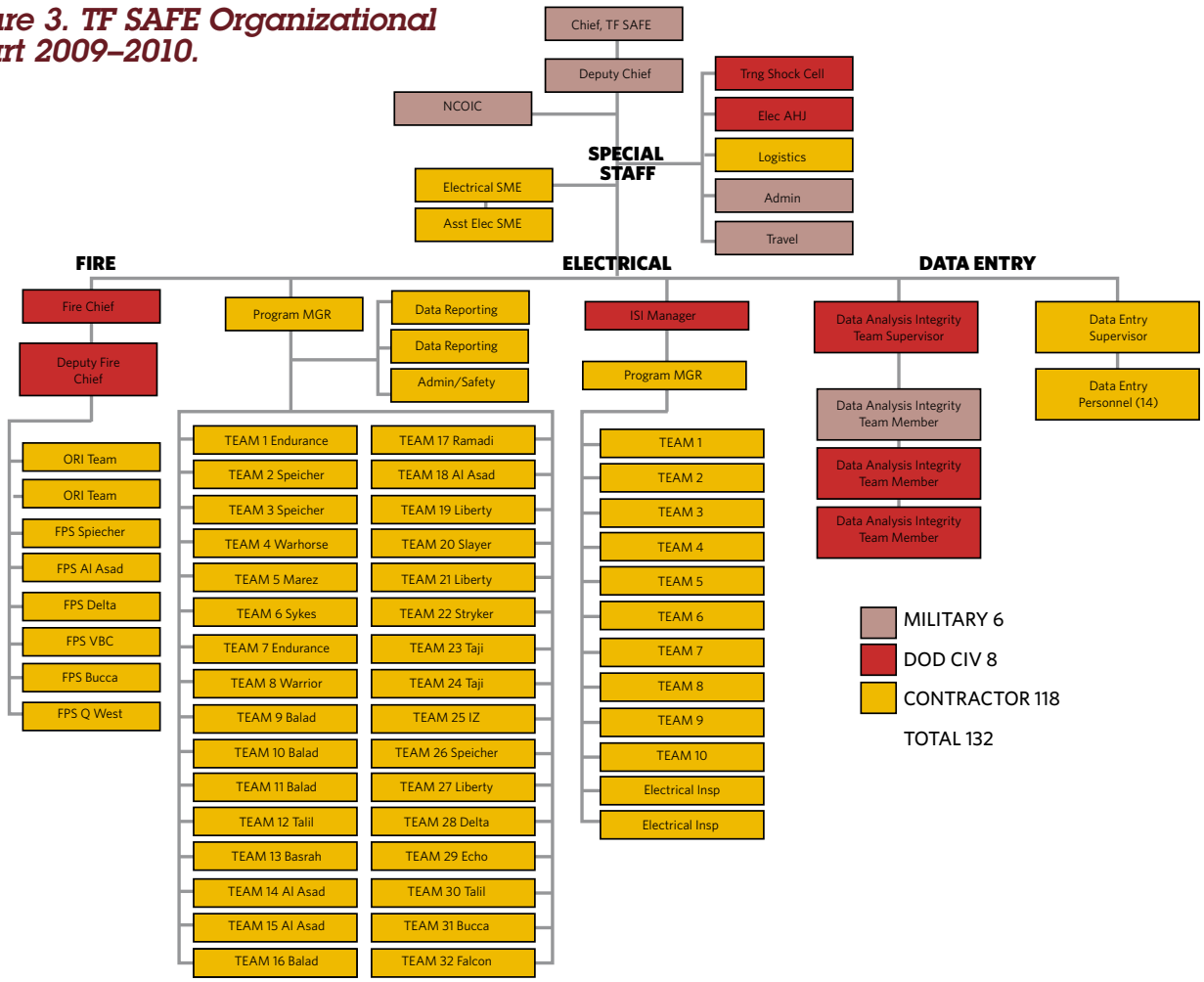
- Investigate electrical shocks & fires.
- Inspect and repair life, health & safety defects on facilities.
- Inspect contract fire departments.
- Conduct an electrical and fire safety awareness campaign.
- Adjudicate electrical code deviation requests.
- Advise and Assist DoS/OSC-I on electrical code compliance.

TF SAFE employed two-person teams of master/journeyman electricians and fire protection specialists (FPS) dispersed across each major base in Iraq to accomplish these tasks. TF SAFE's headquarters personnel, electrical teams, and FPS inspection teams are depicted in the organizational chart below for the 2009-2010 period. The corresponding bases where the electrical and FPS inspection teams were assigned are labeled accordingly in Fig. 3.

TF SAFE's electrical inspection teams focused primarily on facility inspections for life, health, and safety (LHS) deficiencies; in some instances, they conducted facility repairs. In coordination with DCMA quality-assurance representatives (QARs), TF SAFE inspection teams focused their continuous risk management (CRM) efforts on the following areas: showers/latrines (AB Units), containerized housing units (CHUs), life support areas (LSAs) and containerized office areas. The electrical inspection teams conducted a comprehensive check for unsafe conditions looking for improper splices, defective grounding and bonding, any evidence of arcing or overheating, fluorescent lights with unsafe magnetic ballasts and exposed or energized wires.

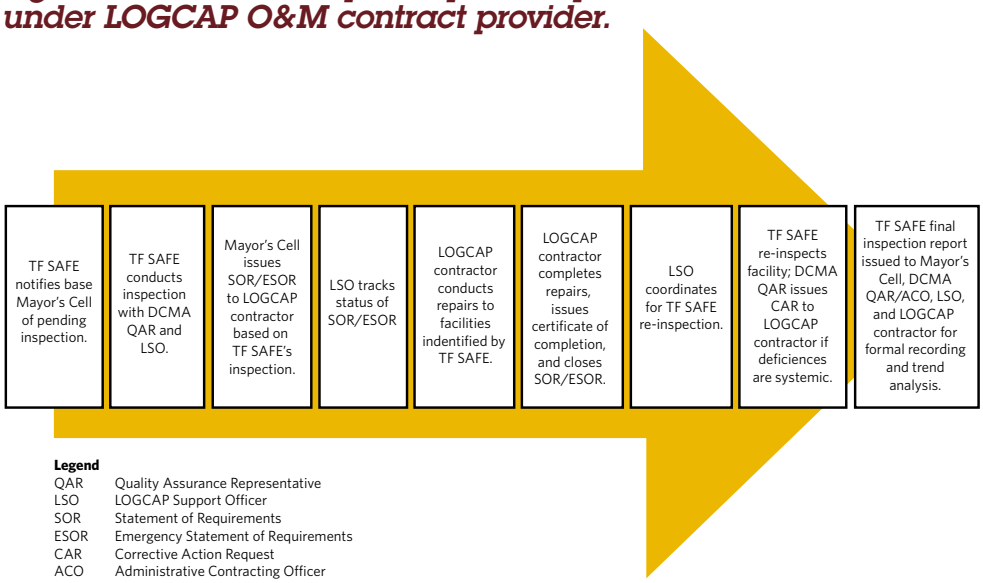
FPS teams focused their inspections on facility checks for operational smoke detectors, charged fire extinguishers, clear egress routes in buildings and proper storage of flammable material. Additionally, FPS teams conducted ORIs of contracted fire departments to ensure the departments were properly trained to conduct firefighting tasks and that fire equipment was in good working order.

Figure 3. TF SAFE Organizational Chart 2009–2010.



As fire or electrical deficiencies were identified on military bases, TF SAFE reported the deficiencies to the mayor's cell or the unit commander, and the mayor's cell/unit passed the repair work to the contracted operations and maintenance (O&M) provider. The mayor's cell is akin to a city manager in the United States, handling facilities and infrastructure on military bases. In areas with no mayor's cell or contracted O&M provider, TF SAFE master electricians repaired the electrical deficiencies. Figure 4 depicts TF SAFE's inspection process for facilities under the LOGCAP O&M provider. As shown, TF SAFE routinely worked with DCMA QARs/administrative contracting officers (ACOs) and Logistics Civilian Augmentation Program (LOGCAP) support officers (LSOs) to hold the contracted O&M provider accountable and make the necessary repairs by tracking service order requests (SORs)/emergency service order requests (ESORs) and issuing corrective action requests (CARs).

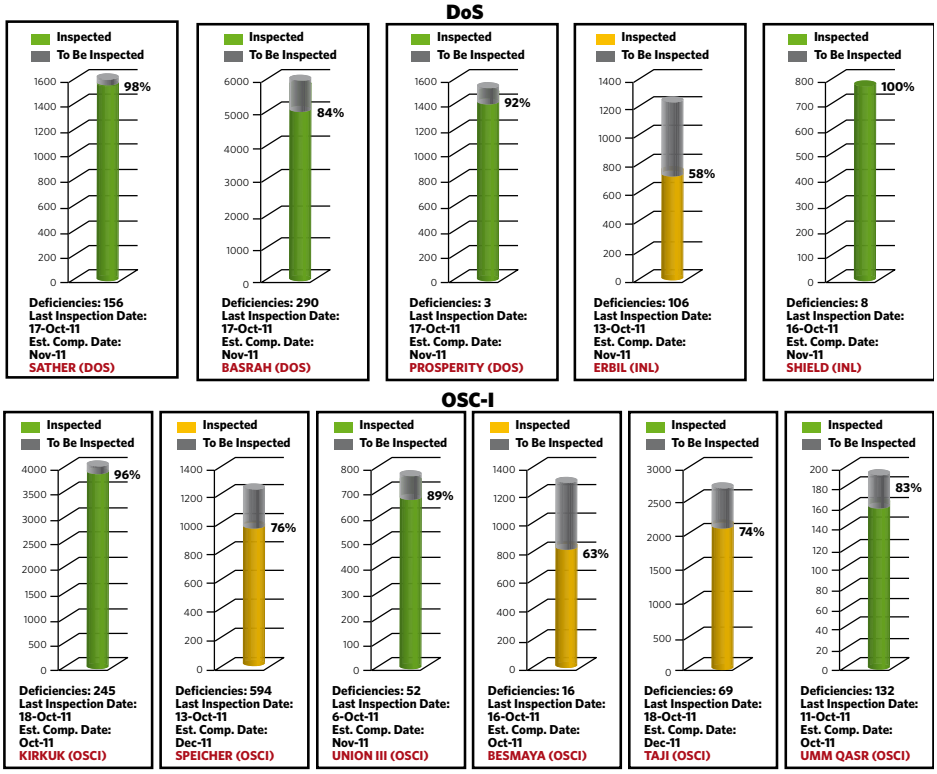
Figure 4. TF SAFE sample inspection process for facilities under LOGCAP O&M contract provider.



DoD Civilians and Contractors Provide Firefighting and Electrical Expertise

TF SAFE needed a highly skilled workforce of subject matter experts to accomplish its mission. In August 2008, MNF-I requested USACE provide master/journeyman electricians and FPSs to support the TF SAFE mission in Iraq. In September 2008, USACE Trans-Atlantic Center (TAC) of Winchester, Va., awarded a $59.5 million contract to support electrical and fire safety inspections throughout Iraq. The time and material (T&M) contract went to the joint venture Stanley Baker Hill LLC (SBH) of Muscatine, Iowa, for 1 year, with two 6-month option periods. Under this contract, SBH provided 70 master electricians and 32 fire protection specialists.

Figure 5. TF SAFE sample facility electrical inspection tracking charts for each enduring site.



The SBH team mobilized and deployed to Iraq by Oct. 30, 2008; USACE and SBH LLC personnel inspected over 176,200 military facilities, to include those covered under LOGCAP as well as facilities maintained by other contracted O&M providers. As the SBH contract only required the TF SAFE contractor to conduct electrical inspections, the USACE Philadelphia District awarded a $9 million contract to Inglett & Stubbs International (ISI) of Smyrna, Ga., for an additional 20 journeyman electricians, operating in two-man teams, to conduct inspections and make repairs on approximately 4,500 facilities on 250 contingency operating locations (COLs) across Iraq.

The SBH contract completed its second 6-month option period, and in September 2010 Versar International of Springfield, Va., won the firm fixed price electrical inspection and repair contract to continue electrical inspection and repair services across the IJOA. The Versar contract had a 1-year base period of performance (PoP) with two 5-month option periods. The U.S. government chose not to exercise the option PoP in ISI's contract, because the Versar contract now included electrical repair services; the ISI contract ended July 1, 2011.

The final augmentation to the TF SAFE team under the SBH contract was the data analysis team. Initially, TF SAFE input data for the electrical inspection effort via an Excel spreadsheet capturing electrical inspection records from the 249th Engineer Battalion (Prime Power) and USACE/SBH. SBH subcontracted to LCM Solutions to stand up a robust Maximo database; the electrical inspection report was revised as priorities and standards were established, SOPs were written, and policies and procedures were drafted. The Maximo database was fully implemented in 2009 and is still in use supporting electrical inspection data tracking efforts in Iraq. The Data Analysis and Integration Team (DAIT) provided the U.S. government oversight of the electrical inspection reports; USACE QAR Jasper Burton led this team and established a fixed transfer protocol (FTP) site for data analysis purposes.

In addition to contracted electricians, USACE also provided high-caliber DoD civilians who deployed in support of the TF SAFE mission. Personnel such as the TF SAFE theater fire chief and other FPSs, DoD civilian electricians, and the authority having jurisdiction (AHJ) to adjudicate electrical code deviation requests throughout theater all came through USACE TAC.

The personnel assigned to TF SAFE successfully completed their mission of protecting the force from fire and electrical hazards during Operations Iraqi Freedom (OIF) and New Dawn (OND). TF SAFE's mission requirements increased during USF-I's "Reposture the Force" phase of OND due to augmented new facility construction to support United States Mission-Iraq's (USM-I's) enduring presence and USF-I troop movement out of theater. The flexibility and professionalism of TF SAFE's personnel prevailed as three additional electrical inspection teams were added to accomplish 100 percent facility electrical inspection on all enduring sites; ensuring a

safe operating environment for USM-I as they assumed mission in 2012.

What We Learned: Best Practices for Fire and Electrical Oversight

TF SAFE was a first-of-its-kind organization established to protect the force from fire and electrical hazards in a Contingency Operating Environment (COE). During the course of its activation period, TF SAFE established best practices to accomplish its mission. The following are recommendations to Defense Acquisition Workforce professionals for providing fire and electrical inspection oversight in a COE.

1. **Leverage all available means to recruit highly trained subject-matter experts**—in this case, master/journeymen electricians and fire protection specialists. TF SAFE used contracting and deployment of DoD civilian personnel to fill a majority of its ranks. Work in the areas of electricity and fire protection requires oversight from highly skilled professionals. The military is unable to fill the required number of personnel for proper oversight in a large operations area such as Iraq. The military can and should provide the requisite government program management and leadership to the task force; however, we must be prepared to leverage contracting and deployed DoD civilians to fill the ranks of electricians and fire protection specialists.

2. **Contracted fire departments in COEs require Quality Assurance/Quality Control (QA/QC) through the use of government subject-matter experts.** When TF SAFE started inspecting fire departments, there was no standardization of personnel or equipment; contracted fire departments failed to meet standards outlined in their contract. The immediate issues identified were poorly allocated equipment and poorly managed personnel. Through FPS inspections, TF SAFE established a training program for contracted fire departments to correct deficiencies. Specifically, TF SAFE initiated a training program to standardize firefighting tasks and equipment maintenance. The average score on TF SAFE's ORIs when first initiated was 77 percent, with the lowest score at 52 percent; after 3 years and four complete rounds of ORIs, the average score was 98 percent. This directly correlates to the 94 percent reduction in fires throughout the IJOA over TF SAFE's 3-year history.

3. **QA/QC of all contractor electrical work in a COE is essential and must be performed by government subject matter experts.** This didn't take place in Iraq until TF SAFE was activated; nearly five-and-a-half years after U.S. forces first embarked on OIF. Without proper oversight by government subject matter experts, contractors will naturally degrade their service to the lowest price technically acceptable according to their respective contract. This can result in using electricians who are not licensed properly, using faulty electrical material, or failing to conduct preventative maintenance inspections of electrical facilities. All those results are unacceptable and can result in catastrophic loss of life for Service members and civilians.

4. **The type of contract used to support fire and electrical inspection oversight in a COE must be flexible enough for the contractor to respond to dynamic and evolving government requirements.** The original electrical inspection and repair contract was a T&M-type contract, which might grow incrementally through the life of the contract;

The before photo (L) depicts spliced and exposed wires serving as a makeshift distribution panel. The after photo (R) depicts the distribution panel after TF SAFE corrected the deficiencies according to NEC 2008 standards.

Theater Fire Chief Sheldon Longnecker (R) conducts an ORI at Victory Base Complex, Iraq.

there were no definitive deliverables and the contract was based on a not to exceed price. The T&M-type contract was appropriate in the early formation of TF SAFE when government requirements were evolving. However, as the government was able to refine its requirements during the last 18 months of TF SAFE's activation period, the switch to a firm fixed price contract was appropriate. Firm fixed price contracts typically have higher upfront costs to the government but lower financial risk to the government over the life cycle of the contract, as the burden is on the contractor to control costs. Through the lessons learned in the formation of TF SAFE, the government is better equipped to define its requirements for fire and electrical oversight in a COE.

The Way Ahead for Fire and Electrical Safety Oversight in Iraq

The deactivation of TF SAFE on Nov. 12, 2011, marked a key transition point for fire and electrical safety in Iraq. The standards and procedures set by TF SAFE will endure as USACE exercises the second option PoP on the Versar electrical inspection and repair contract to provide one electrical inspection team to directly support DCMA as it provides oversight for the LOGCAP IV contract. Fire protection oversight continues through the use of DCMA contracting officer representatives, composed of facility managers on DoS sites and installation managers on OSC-I sites.

TF SAFE's success is due to the hard work, perseverance, and technical expertise of the Service members, DoD civilians, and contractors who were a part of the Task Force during the 3-year activation period. They can rest assured that the standards and procedures they set will endure as a testament to their commitment to engineering excellence.

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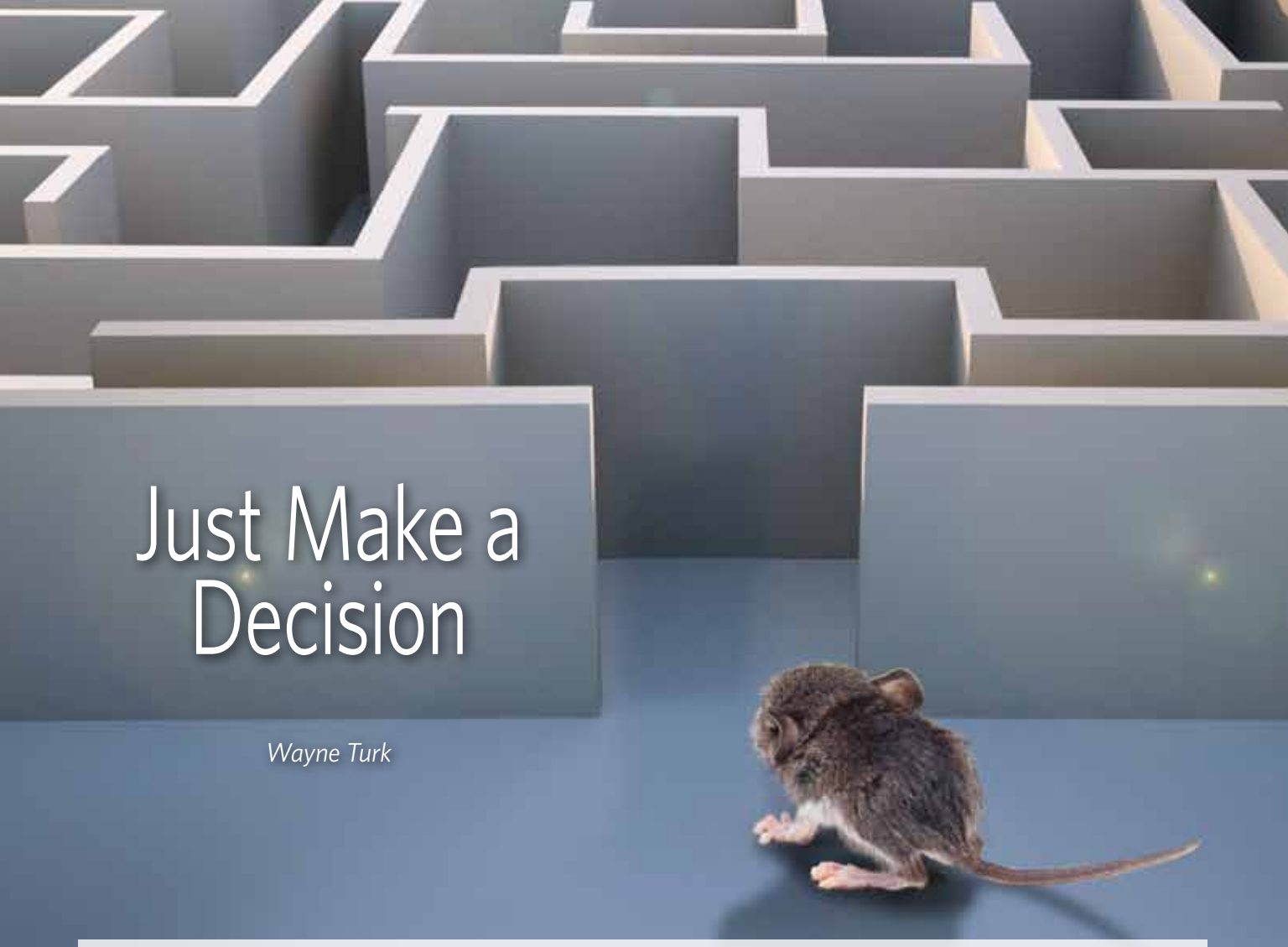

Just Make a Decision

Wayne Turk

How many times have you had to just sit there, waiting for someone to make a decision, and mentally urged them to "just decide so we can move ahead!"? Or are you the one who has trouble making a decision? It happens all the time. Remember: We know what happens to people who stay in the middle of the road. They get run over.

One of the most frustrating situations you can have is working with an indecisive manager, one who keeps postponing decisions in the hope that someone else will make that decision or that the problem will simply go away. We find people like that everywhere. Too often they are promoted by virtue of their seniority or technical skills and not by their ability to manage (or make decisions).

My wife had a boss who would not make a decision if it was difficult or controversial. It put pressure on those working for her and drove most of them nuts (not permanently crazy, luckily for me). Other than that, the boss

Turk *is a retired Air Force lieutenant colonel, a defense contractor, and the author of* Common Sense Project Management. *He is a frequent contributor to* Defense AT&L.

was a pretty good one, but that one factor negated most of the good. It was a major reason that my wife found another job.

'Bad' Decisions

There are very few "bad" decisions. Yes, there are many wrong decisions, but not too many bad decisions. I define a "bad" decision as one with dire consequences—someone is hurt, someone is killed, the business goes bankrupt, or something similar, with strong and possibly permanent results. A poor decision or a wrong decision is one with less serious consequences. There are lots of those. We've all made them—accepting a job we were not suited for, hiring the wrong person, buying the more expensive car (or the sports car rather than the family sedan or van), voting for the wrong politician, and so forth. I am trying to stay away from too many examples in our personal lives and focus on business/management decisions, but everything in this article applies to your personal life, as well.

Risk is inherent in any business. If we based our decisions on random probability, 50 percent of all our decisions will be wrong. But that also means that the other 50 percent would be right. That's probably better than many of the TV meteorologists. (Or it seems that way, anyway). But if we make no decision, we have forfeited a 50 percent chance of success, even if we were just flipping a coin to determine our decision.

Another advantage of making prompt decisions is that if it turns out to be wrong, you can fix it and salvage the situation faster. To be able to make prompt decisions, we must let go of our need to always be right. Nobody is right all the time. There are too many factors not in our control. For example, what is right today may not be right next year when our country's economic conditions are different, the budget has changed, or the needs have shifted. Look at the history of the stock market as an example.

Let's look at it from a project-management standpoint. If you put off making decisions to do things you believe will help the project toward completion, you won't finish the project on time. You have to learn to be decisive, because there usually isn't just one choice that will work. You have probably heard the old saying that there are lots of ways to skin a cat. (Of course, that saying ignores the fact that the cats don't like any of them.) You won't always pick the perfect solution, but an 80 percent or even 60 percent solution is better than doing nothing. Be decisive. Make your decision, and then execute. If it doesn't work out, then try something else. Don't sit there and wring your hands, saying "Oh, woe is me. I made a mistake." Just chalk it up to experience, learn from it, and move on.

One thing about decision making is that you get better with practice. Every time you make a decision, any kind of decision, you learn something. Sure, it may be negative learning, but so what. The more decisions you make, the sharper your decision-making faculty becomes. "Good decisions come from experience, and experience comes from bad decisions." I don't know who said it first, but they were right.

Get the Facts First

I don't want anyone to think they have to make every decision immediately. In most management (and personal) decisions, you have to get the facts first. You have to weigh the facts, the risks, and the possible results. Here are some decision-making steps that will help:

- Define the problem and the purpose of your decision.
- Identify the criteria for the needed decision, considering any goals, objectives or specific desired outcomes, as well as costs, resources available, and importance.
- Weight the criteria, deciding the relative importance of each.
- Generate alternatives that might accomplish your various goals.
- Rate each alternative on each criterion, assessing the extent to which each action would accomplish each goal and the costs/resources required.
- Determine the best alternative action with the resources available.

Following those steps doesn't mean you have to take a long time to make your decision. You want to be quick, but not so quick that you do something dumb. Just don't waste an inordinate amount of time. Time is money. Remember that "no decision" is actually a decision in itself. Taking no action is a decision and sometimes the right one. (I am full of clichés.)

Other Tips

The following are tips from a number of different sources. I would like to give credit to the originators, but there is so much overlap that I am not sure who they are (or in some cases, where I found the tips). I have also done some editing to include personal thoughts and experiences.

Be confident. Keep telling yourself that you are decisive and making the best decisions possible with the information you have.

Don't be afraid. There are two parts to this: (1) Don't be afraid to make a decision. The biggest cause for indecisiveness is fear of the consequences. When making an important decision, don't let fear of the consequences overwhelm you. (2) If you make a wrong decision, don't be afraid to change it. Learn to embrace failure as a way to learn.

Don't lean on your preconceptions. Forget about your preconceptions and fixed ideas about things. Clarity is extremely important for taking a good decision, so keep an open mind. This is a great way to put things into perspective and make the best decisions. That is also why you want to gather the facts and talk to your people about their ideas.

Be instinctual. Some decisions, no matter how much you think them over, don't seem to have good results. The longer you think about them, the more problems and obstacles you'll find in your path. This is when you have to rely on your natural instincts to guide you through.

Consider the outcomes. Look at the possible outcomes. Try look look at both the short-term and long-term. Do a cost/benefit analysis. Try to pick the best outcome with the least cost. Consider the tradeoffs. Sometimes it may be that the benefits of one choice outweigh the costs or vice versa. Also keep in mind the Law of Unintended Consequences.

Take a step back. Even if you can only see a limited set of options, don't stop there. Expand the possibilities by considering your hidden assumptions and creatively brainstorm other solutions with your people, your peers or even your boss.

Set a time limit. Force yourself to make decisions under tight deadlines. You don't always need a lot of time to make sound decisions; you just think you do. But again, don't rush yourself so much that you don't take the facts and consequences into consideration.

Think out loud or brainstorm with others. It is an old process, but a pretty good one. Grab some paper. Clearly define the question at the top of the page, write down the options and assumptions, followed by any other thoughts or concerns. Just dump all the ideas and thoughts on to the paper as they come up. Don't edit; just write them all down. Then go back and look at it all more deeply.

Be prepared to screw up. You are going to make mistakes. We all do. Sometimes life takes us into directions that we wish we had never gone. What's done is done and you should keep it that way. Look at it as a life experience, as a step up in your progression toward a complete life, and a way to learn.

Conclusion

Much of this article sounds contradictory. Some of it does to me, and I wrote it. But what I am really trying to say here is to move forward. Be decisive. Take action (and that action may be no action if it is the best option). Learn from your mistakes and your successes.

Keep in mind circumstances change. That is why you have to look at the available information, consider the consequences, list your options and decide. Yes. Use the input from others, but as the project manager you have the final say. Being decisive will also make your people happy. They would rather you make a poor decision than to be indecisive.

Having the responsibility for making decisions is why managers make the big bucks (even if those bucks aren't really that big sometimes). As the Nike ads said, "Just do it!"

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