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Defending Against Biological and Chemical Attacks



Defense AT&L interviews

Brig. Gen. Jess A. Scarbrough, USA

Joint Program Executive Officer for Chemical
and Biological Defense

ALSO

WSARA: Baselining Programs Early Compounds the Problems

Does MRAP Provide a Model for Acquisition Reform?

International Competencies for the Defense
Acquisition Workforce

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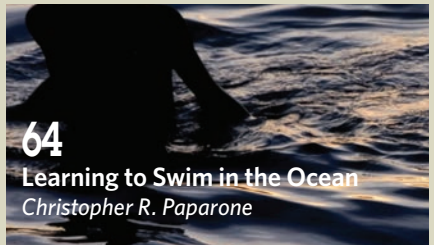
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Defending Against Biological and Chemical Attacks

Brig. Gen. Jess A. Scarbrough, USA
Joint Program Executive Officer for Chemical and Biological Defense



The Joint Program Executive Office for Chemical and Biological Defense, formed just seven years ago, is on the forefront of developing cutting-edge defenses and protection for military servicemembers against potential chemical and biological attacks. In the past year alone, the organization has fielded more than 1.3 million items of equipment to the military services, including protection masks, biological detectors, and chemical detectors. The organization is also involved in preparing our country to respond to potentially crippling pandemics, as demonstrated by its involvement in H1N1 research. Army Brig. Gen. Jess A. Scarbrough, the joint program executive officer for chemical and biological defense (JPEO-CBD), spoke with *Defense AT&L* about the latest initiatives in the program office. Mike Kotzian, the DAU Mid-Atlantic Region acquisition/program management department chair, oversaw the development of this interview.



Q You currently serve as the JPEO-CBD, the focal point for research, development, acquisition, fielding, and life cycle support of CBD equipment and medical countermeasures for DoD. Can you give us an overview of your role and responsibilities?

A We could spend a lot of time discussing my role and responsibilities in the Joint Program Office; however, I will summarize them at the strategic level to give your readers the information necessary to understand this great organization.

My role is leading this 1,100-person acquisition organization to set the culture, synchronize the strategic

environment, and to provide vision. We develop, field, and provide life cycle management for both medical and non-medical chemical and biological defense equipment and ground force protection systems to the four Services, to include Special Operations Command. We support the forces and ongoing operations; we field improved joint capabilities; we develop advanced technologies for the future; we coordinate and, wherever possible, we support the interagency and international demands for our systems.

My responsibilities:

- I am the milestone decision authority for the chemical and biological defense medical and non-medical equipment and ground force protection systems throughout the acquisition process. I ap-

prove each equipment development program for cost, schedule, and performance as it goes through each phase of the acquisition process, and ultimately, fielding that equipment according to the requirements generated by the Services.

- I am the joint materiel developer responsible for delivering the chemical and biological defense and ground force protection systems to all the Services.
- I communicate and coordinate the status of our programs to all our stakeholders as they progress through the acquisition phases. Our stakeholders include the Office of the Secretary of Defense for Nuclear, Chemical and Biological Programs; the J-8, Joint Requirements Office for Chemical and Biological Equipment; the Joint Science and Technology Office for Chemical and Biological Defense; the Test Executive for Chemical and Biological Defense; the Program Analysis and Integration Office; and the Army, Navy, Air Force, Marine Corps, and Special Operations Command.
- I am the life cycle manager for all chemical, biological, and force protective systems fielded. The Services are ultimately responsible for the sustainment of equipment, but it is through my office that we work joint strategies and support to lessen the operations and maintenance money spent on our systems.
- I coordinate and collaborate with other departments and agencies, including the Department of Homeland Security, the Office of the Secretary of Health and Human Services, the Health and Human Services' Center for Disease Control and Prevention, the U.S. Army Medical Research and Materiel Command and Medical Research Institute for Infectious Disease and Prevention, and the Food and Drug Administration. This coordination and collaboration leverages all of our funding to provide the taxpayer the best return possible on each dollar spent.
- I strive to keep myself and my senior leaders aware of the national strategic direction as it pertains to our programs and impact on those programs.
- I look for opportunities where our pieces of equipment can be better integrated and interoperable with the Services' major defense programs.

My vision is that our organization remains an agile, results-oriented, and transformational acquisition enterprise delivering net-centric, modular, tailorable, and multipurpose capabilities to the warfighters and our nation.

Q After becoming the JPEO-CBD, what did you see as the priorities for this position? What changes do you anticipate the organization facing in the future, and how are you preparing for those changes?

A Foremost, the JPEO-CBD is only seven years old. I inherited an organization with great processes and procedures

already in place. The Department of Defense is simultaneously transforming and recapitalizing U.S. Armed Forces while prosecuting operations in Iraq and Afghanistan and unconventional warfare against global terrorist threats. Our daily efforts are shaped by these events. We are committed to fielding the best chemical and biological defense equipment, medical countermeasures, and force protection systems to joint warfighters. As the government refocuses on acquisition reform and contracting practices, we remain ever vigilant to be the best possible stewards of taxpayer dollars. We have developed chemical and biological defense systems that can be used in both conventional (major combat operations) and irregular (homeland defense, security, and force protection) scenarios.

I have three priorities for the JPEO-CBD:

- Establish a "trail boss" approach to better integrate our systems and equipment and field a system-of-systems capability
- Ensure acquisition reform
- Establish a single contracting office for our entire enterprise.

The trail bosses' strategic initiatives are:

- Biosurveillance, to integrate and tie together our detectors, diagnostic equipment, medical countermeasures, and information tools into the existing national biosurveillance structure
- Non-traditional agent defense, to integrate upgraded technologies that will detect, protect individuals from, or counteract these agents
- Major defense acquisition program capability integration, whose primary focus is to assist those program managers with integrating chemical, biological, radiological, and nuclear capabilities into their platforms
- Information management/information technology, to create and integrate a single chemical, biological, radiological, and nuclear defense Web-enabled information system that fuses all of our sensors, warning, and reporting systems and decision-making tools.

Our program managers will continue to lead and manage individual programs; the empowered trail bosses will focus on the challenges of integrating our systems and equipment, both internally and with the Services' systems and equipment. I plan to elaborate more on acquisition reform as we continue, but for now, I will just say that acquisition reform is one of my priorities, and that we have embraced acquisition reform as one more way to continue to build the credibility of the acquisition process.

We have found one of the secondary effects of acquisition reform to be the need for additional contracting expertise and consistency. Right now, we meet our contracting needs through 23 different contracting offices across the Services, which does cause issues in our generating a consistent approach toward our contract solicitations. To meet our need

for contracting expertise and consistency, we are working with the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology and the U.S. Army Research, Development and Engineering Command, a major subordinate command of Army Materiel Command, to set up a contracting office to support the JPEO-CBD. This will simplify our contracting efforts and facilitate contract improvements across the enterprise.

Q *The JPEO-CBD is organized into eight joint project managers who lead, manage, and direct the acquisition and fielding of chemical and biological detection and reconnaissance systems, individual and collective protection systems, decontamination systems, information management systems, medical devices, drugs and vaccines, and installation and force protection systems. Can you discuss the organizational structure of the JPEO-CBD and the specific duties of the joint project managers?*

A We have eight joint project managers within the JPEO-CBD at this time, and we are in the process of chartering a ninth. Our Joint Project Management Offices are Contamination Avoidance, Guardian, Individual Protection, Information Systems, Medical Systems, Decontamination, Collective Protection, and Biological Defense. Our recommended ninth office is the joint project manager for Transformational Medical Technology. Joint project managers are responsible for the complete life cycle management of their closely re-

lated products, from technology development (Milestone A) through fielding (Milestone C) and sustainment. These tremendous acquisition professional men and women are where the rubber meets the road. They develop and procure all the new equipment and train key personnel on their operation.

Specifically, I expect our joint project managers to be strategic thinkers and enablers, and to assist them in this, we have designated some of them as trail bosses for strategic initiatives that we discussed earlier. When we develop equipment, I also expect them to pursue multipurpose capabilities to the maximum extent possible. For example, I'd like to see them develop and field capabilities that transcend operational levels, such as our Joint Biological Agent Identification and Diagnostic System. This system is used at the operational level to diagnose individual samples, but it has a theater-wide and global role when used to support efforts to conduct biological agent medical surveillance. Another example of multi-purpose equipment would be the joint service general protective mask, which not only provides enhanced performance and replaces multiple older masks across all of the Services, but also has a variant version that is sought after by consequence management personnel and others.

Q *Biological warfare, particularly in light of anthrax scares in the United States over the past few years, is a real concern to the*



safety of the warfighters and our country. Can you discuss how JPEO-CBD is preparing to respond to biological warfare and what role the organization plays in the nation's biological defense?

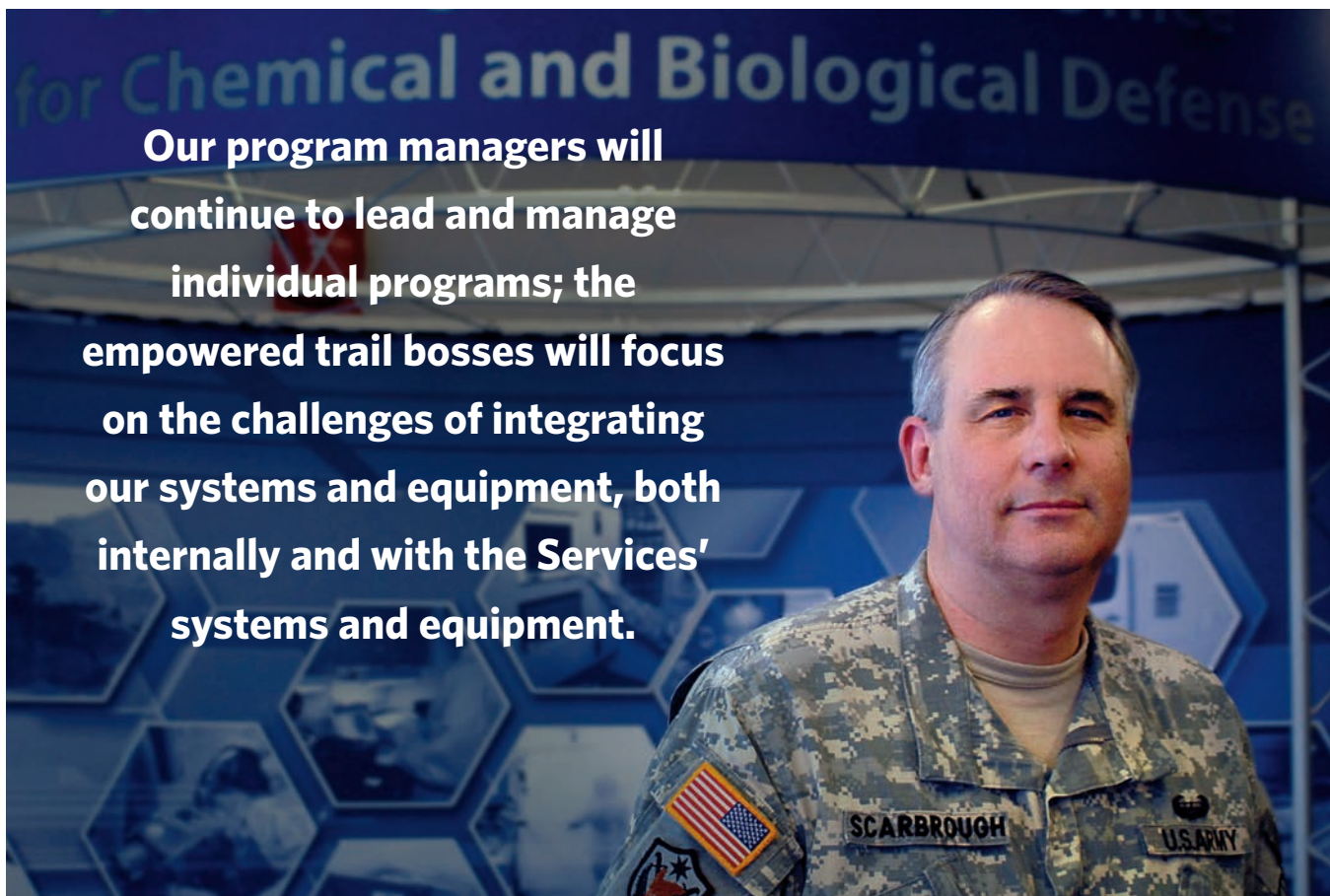
A At the strategic level, we tie into the prevention of the proliferation and countering weapons of mass destruction—one of the key six missions emphasized by Secretary of Defense Robert Gates in the 2010 Quadrennial Defense Review. Of the eight military mission areas for combating weapons of mass destruction, the JPEO-CBD role is primarily in chemical, biological, radiological, and nuclear passive defense, meaning we provide both medical and non-medical capabilities to defend personnel against the use of these weapons. Wherever we can, however, we develop multi-purpose equipment that transcends passive defense.

We have partnered with the Defense Threat Reduction Agency, the Defense Advanced Research Projects Agency, the Department of Homeland Defense, the Secretary of Health and Human Services, the Joint Science and Technology Office, the United Kingdom, and others to provide vaccines against classic biological warfare agents such as anthrax and smallpox, therapeutics against emerging biological threats such as the Marburg virus, and diagnostic and detector equipment to identify agents in the environment; and to conduct medical surveillance and screening.

In this last area, per the president's State of the Union address, we are rapidly expanding our diagnostic capabilities to include infectious diseases such as H1N1.

We provide integrated consequence management capability sets (detection, protection, decontamination, etc.), to National Guard civil support teams as well as state-of-the-art detectors and other equipment to homeland defense units such as the U.S. Army 20th Support Command (Chemical, Biological, Radiological, Nuclear and Explosive) and the Chemical, Biological, Radiological, Nuclear and Explosive Consequence Management Response Forces. In addition, we field integrated installation consequence management response capabilities to select installations both at home and abroad.

Just as important, within our community, we are doing the research necessary to develop the partnerships and platforms necessary to rapidly identify and develop treatments for emerging biological threat agents. We are also developing and integrating the decision-making tools, individual protective equipment, and decontamination capability necessary to strengthen our ability to respond to biological agents in each step of a response, from warning of attack, providing medical pre-treatments, respiratory and barrier protection, making post-attack characterization and decisions, and recovery through decontamination and providing post-exposure prophylaxis.



Q *In addition to biological warfare, the United States faces challenges with responding to a pandemic, such as the recent outbreak of H1N1. In fact, when H1N1 was first realized as a major threat, the Centers for Disease Control and Prevention in Atlanta, Ga., contacted the JPEO-CBD's Joint Project Management Office for Chemical Biological Medical Systems to request DoD's assistance in developing a way for DoD medical professionals to identify and diagnose the disease in humans. Can you further discuss JPEO-CBD's role in responding to the H1N1 outbreak and how it is able to respond to other outbreaks?*

A In 2009, the Secretary of Health and Human Services declared a public health emergency due to pandemic influenza. The next day, the Centers for Disease Control and Prevention asked us to add swine flu as a capability on the system we developed that provides deployable medical units with a way to identify and diagnose human disease.

We partnered with the Centers for Disease Control and the Armed Forces Health Surveillance Center Division of Global Emerging Infections Surveillance and Response Systems to prepare the submission for the Food and Drug Administration, and 83 days after submitting the request to the Food and Drug Administration, the Department of the Army Office of the Surgeon General received notice that the Food and Drug Administration granted our emergency use authorization request. This is a process that normally takes 18 to 24 months. As I stated earlier, we are continuing to expand our diagnostic capabilities to include other infectious diseases.

Our recommended ninth joint project manager for Transformational Medical Technology has made significant strides in bringing our rapid response capability beyond diagnostics toward being able to rapidly provide effective medical treatments. Recently, they have rapidly characterized and provided an effective treatment for H1N1 in an animal population. While there is a long way to go for us to be able to work this type of capability through the Food and Drug Administration process for use in humans, we are making significant progress in this area.

Q *While operations in Iraq are still ongoing, there has been a shift in focus to operations in Afghanistan. Can you discuss the role JPEO-CBD is playing in Iraq and Afghanistan and how the organization is preparing for the shift in operational focus from Iraq to Afghanistan? How does it deal with the challenges of providing fast and needed support to military groups that may be geographically isolated?*

A Our initial emphasis in Iraq was the rapid fielding of capabilities to exploit sensitive sites that may contain chemical warfare agents or toxic industrial chemicals, and to work

with other project managers to upgrade the survivability characteristics of the vehicles into which our equipment was integrated. Over time, our emphasis became working with other program executive offices under the Office of the Assistant to the Secretary of the Army for Acquisition, Logistics and Technology to field urgently needed integrated force protection solutions. This emphasis has carried over to Afghanistan.

To meet the logistic challenges inherent in fielding these capabilities, we again emphasize transparency, collaboration, and communication with our partners in the Office of the Assistant to the Secretary of the Army for Acquisition, Logistics and Technology; U.S. Tank and Automotive Command; Defense Logistics Agency; and our industry partners providing in-country contractor logistic support. We also keep track of our industrial base and our ability to respond to potential increased requirements due to an increase in operational tempo or national emergency.

Q *A new Non-Medical Chemical Biological Defense Facility is currently being built at Aberdeen Proving Ground, Md., and this facility is expected to be a place where all the military services can work together on chemical and biological defense. Can you discuss how JPEO-CBD works across the military services to deliver the best chemical and biological defense products?*

A In regard to your mention of the new facility, we are certainly looking forward to being co-located with our partners in the Joint Science and Technology Office; the U.S. Air Force 649 Aeronautical Engineering Systems Squadron; the U.S. Army Research, Development and Engineering Command; and the U.S. Army Edgewood Chemical and Biological Command at Aberdeen Proving Grounds.

There are two levels that we work across the military services and U.S. Special Operations Command to deliver chemical and biological defense products. On one level, it is the entire chemical and biological defense program team that works effectively across the military services to deliver capability. In that team, the U.S. Army is the executive agent for the program, and I work directly for Dr. Malcolm Ross O'Neil, the Army acquisition executive, to execute my acquisition responsibilities as a milestone decision authority. Andrew Weber, the assistant to the secretary of defense for nuclear, chemical and biological programs, and the Office of the Deputy Assistant to the Secretary of Defense for Chemical and Biological Defense and the Chemical Demilitarization Program provide the program strategic guidance and oversight. The Joint Requirements Office, the Joint Science and Technology Office, the chemical and biological defense test and evaluation executive, and the Program Analysis and Integration Office all play a critical role in the program's ability to meet the chemical and biological defense needs of the armed forces and our nation.

On the JPEO-CBD-specific level, my predecessor worked hard to make us a joint organization, and I am enjoying the results of his work. We have joint project managers and military and civilian employees representing all four Services and U.S. Special Operations Command. We have built joint processes, such as our materiel release process and Joint Quarterly Equipment Readiness Reviews; joint working groups, such as our Joint Logistic Advisory Council; and a joint but centralized and authoritative hotline and logistic information system, called the Joint Acquisition Chemical, Biological, Radiological and Nuclear Knowledge System. We maintain credibility with our customers by ensuring they have access to and knowledge of everything we are doing and also by providing constant interface and communication at every level. All of that together helps us to work across all of the Services and U.S. Special Operations Command to deliver best-of-breed chemical and biological defense products.

Q *The Joint Project Manager for Information Systems is responsible for providing the warfighter with integrated early warning capabilities of chemical and biological hazards, a hazard prediction model, and state-of-the-art consequence management and course of action analysis tools. Can you further discuss those warning tools and provide examples of them in action?*

A When individual chemical or biological sensors are triggered, the commander has two questions. The first question is, "What is the hazard area?" The Joint Warning and Reporting Network, which answers that question, provides the joint force commander with a comprehensive warning and reporting capability to collect, analyze, identify, locate, report, disseminate, and minimize the effects of hostile chemical, biological, radiological, and nuclear attacks or accidents and incidents. We have integrated this program with the Global Command and Control System—Joint, -Maritime, and -Army.

The second question is, "Where and how is the hazard moving?" The Joint Effects Model, which answers that question, provides the single, validated capability to predict the transport and dispersal of high-fidelity downwind hazard areas and effects associated with the release of chemical, biological, radiological, nuclear, and toxic industrial hazards into the environment. The model incorporates the impacts of weather, terrain, and material interactions into the downwind prediction while providing enhanced situational awareness of the battlespace and real-time hazard information to influence and minimize effects on current operations. This model is integrated with the Joint Warning and Reporting Network system and the Service command and control systems, and is also available as a standalone variant.

I am very excited about our movement toward an open chemical, biological, radiological, and nuclear defense Web-enabled service and service-oriented architecture for the military services, homeland defense agencies and elements,

and our coalition partners. This capability will fuse information from all available sensors to dramatically increase our chemical, biological, radiological, and toxic industrial chemical detection capabilities; and it allows the user to access a wider array of information and tools he or she may require to mitigate the effects of these agents on their operations or to the population.

Q *The JPEO-CBD is pursuing technology advances in sorbents, coatings, and physical removal, which are expected to reduce logistics burden, manpower requirements, and lost operational capability associated with decontamination operations. Can you further discuss how the Chemical and Biological Defense Program's advances will improve capabilities without the need for additional manpower requirements?*

A As you stated, decontamination operations, as we know them today, are resource- and labor-intensive operations. In our decontamination family of systems acquisition strategy, we are looking at capabilities to reduce the need for decontamination, like self-decontaminating or strippable coatings for vehicles; we are developing technologies to focus decontamination on the specific areas of a vehicle that are contaminated, like chemical agent disclosure sprays; and we are developing a family of decontaminating agents that will be more effective and quicker acting across the entire chemical and biological threat spectrum.

In other programs, we are developing the capability to rapidly decontaminate sensitive equipment and platform interiors, such as night vision devices and aircraft cockpits. We are also in discussions with the joint combat developer, the Joint Science and Technology Office, and the Joint Requirements Office about pursuing other avenues—such as robotics—for further reducing the manpower and logistic footprint associated with decontamination operations.

Q *You previously served as the assistant deputy for acquisition and systems management, Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology. Can you discuss how that job prepared you for your current duties?*

A My previous duties as the chief of staff to the Army acquisition executive and the assistant deputy for acquisition and systems management in the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology prepared me for my existing duties by helping me to understand the importance of best business practices, transparency, partnership, collaboration, and succinct communications as I work across the Chemical and Biological Defense Program enterprise; and it helped me learn to synchronize timely decisions to support my joint project managers to develop and field integrated chemical and biological defense

capabilities both inside and outside the Department of Defense.

My predecessor had established multiple joint processes, to include joint life cycle management reviews, joint quarterly equipment readiness reviews, and the Joint Logistics Advisory Council. Because of these mature management processes, I am able to focus on key areas, such as acquisition reform and providing our joint warfighters and first responders with enterprise-type solutions. Acquisition reform helps us to maintain the highest acquisition standards in providing more rigor to our processes and also assists us in getting the right capability, at the right cost, at the right time, to the right people who need it. My past experience as the program manager for the Tactical Exploitation of National Capabilities Program helps me to understand the importance of enterprise solutions that will ensure we continue meeting the users' expectations that our systems will be integrated across the chemical and biological defense portfolio.

Q *As the acquisition process is refined due to DoD 5000.02 and the recently passed Weapon Systems Acquisition Reform Act, how is JPEO-CBD responding to those changes in the acquisitions process?*

A We've embraced these changes as a way to continue to build the credibility of the acquisition process and the acquisition community with all of our stakeholders. Upfront involvement by the entire community in the materiel development decision ensures there is a common understanding throughout the community of both the requirement and the maturity

and ability of available technology to meet that requirement. This prevents discovery and surprises in later stages of a program. We have conducted materiel development decisions on 10 projects to date, and we have six more scheduled in the next 10 months.

There are secondary effects to this early involvement of the community. Much more time and funding (and the right type of funding) is required in the technology development phase. As I mentioned earlier, partially in response to our increased contracting needs, we are also working with others to establish our own contracting office. But, again, when combined with the requirement for competing prototypes, the materiel development decision process is evolving to be an excellent tool to limit risk in our capability development.

Acquisition reform is not the only way we continue to build the credibility of the acquisition process and the acquisition community with all of our stakeholders. Again, my predecessor put in place multiple levels of program reviews through which we maintain transparency and communication with all of our stakeholders on every program we execute.

For example, each program within the JPEO-CBD portfolio undergoes extensive review on a quarterly basis in a joint life cycle management review, which is open to all of our stakeholders. Program assessments cover systems engineering, logistics supportability and sustainability, test and evaluation, acquisition documentation, cost, funds execution and contractor performance, schedule, and overall performance. Another example is our joint quarterly readiness reviews for those programs entering or in the life cycle sustainment phase. All of our stakeholders participate in these reviews, and through them, we have been able to quickly identify and resolve stakeholder logistic and sustainment concerns across our portfolio of fielded capabilities.

Q *How has the Chemical, Biological, Radiological, and Nuclear Survivability Policy affected the way the JPEO-CBD does business or plans to do business in the future.*

A From an organizational or policy perspective, it doesn't change our plans for how we do business at all. We have already designated one of our joint project managers as a trail boss for major defense acquisition programs, and he works with those programs upfront to help them integrate individual protection, decontamination, collective protection, sensors, and information systems seamlessly into their platforms within their cost and schedule constraints.



From a scope and funding perspective, it changes our plans significantly. Working with program managers across all four Services to ensure the chemical, biological, radiological, and nuclear survivability of every mission-critical weapons platform within the Department of Defense is a huge undertaking. But our approach to this task is our usual approach: For the partnerships required for success, we must be open and transparent about what we can and cannot do, and above all, we must ensure we maintain active lines of communications with all of our stakeholders and partners.

Q *How is JPEO-CBD attracting the best and brightest scientists to its workforce? What hiring and recruiting plans are in effect for your organization?*

A We have created several technical and scientific billets within the JPEO-CBD and work hard to find talented people to fulfill these billets. We do seek out expertise from across the Service laboratories, academia, industry, the entire federal government, and our international allies. We can bring far more expertise to meet our needs through collaboration and partnerships than we can by trying to recruit all of our own experts. Keeping our infrastructure and project funding at levels adequate to retain this expertise across the entire community while combating weapons of mass destruction is an issue we work through every budget cycle.

The JPEO-CBD is moving to Aberdeen Proving Grounds in 2011, and we are working with the installation and our



partners at the U.S. Army Research, Development and Engineering Command and Edgewood Chemical and Biological Command to put in place a new Joint Center of Excellence there. We are all very excited about the potential that this Joint Center of Excellence for chemical and biological defense represents for recruiting and retaining top talent.

Given this move and the Department of Defense intent to grow the acquisition workforce, we are offering as many financial (i.e., relocation bonus) and work (i.e., alternative work schedule) incentives as we can to retain our workforce while also recruiting talented entry-level personnel at Aberdeen Proving Ground with plans to accelerate their training to meet our needs in various functional areas, such as acquisition logisticians and financial analysts.

Q
Are there any further items you would like to discuss with readers?

A
Every day, we in the JPEO-CBD focus on supporting ongoing operations, improving the chemical and biological defense capabilities of our nation and building for the future. In the past year, we have fielded more than 1.3 million items of equipment to the Services and U.S. Special Operations Command. This includes more than 149,900 joint Services general purpose masks, more than 7,000 chemical detectors, more than 400 biological detectors, and integrated protection solutions for 12 installations both inside and outside of the United States. In addition, we have and continue to meet urgent need requirements for force protection for ongoing operations.

We are committed to working with all of our partners to mitigate the rapidly evolving chemical, biological, radiological, and nuclear threats facing our armed forces and the nation. With our partners, we are pulsing academia, industry, and the world for existing technologies that we rapidly develop into cutting-edge capabilities required to defeat and to assist in deterring those threats. Whenever possible we are ensuring these capabilities provide a benefit both to forces undertaking conventional operations, and to those organizations involved in defending our homeland.

In closing, I want to emphasize the collaboration we enjoy through partnerships we have developed and continue to nurture. We foster an atmosphere of transparency and embrace our responsibilities to remain relevant and responsive to the taxpayers, to our stakeholders, and most important, to the warfighter.

Q
Thank you very much for your time.



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WSARA: Baselining Programs Early Compounds the Problems

Peter Modigliani



Congress unanimously approved the Weapon System Acquisition Reform Act in 2009 because if there's one issue that everyone in Washington can agree on, it's that defense acquisition needs additional reform. While enhanced discipline and rigor is required, the section of the law that attempted to control cost growth with additional organizations, processes, and requirements early in the acquisition life cycle will actually increase the costs and risks of many large programs.

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The biggest pitfall of WSARA is baselining major defense acquisition programs at Milestone A and driving Nunn-McCurdy breaches if programs exceed the initial cost and schedule estimates by 25 percent. At Milestone A, the effort is still in the early concept stages. The users have developed an initial capabilities document to define the capability gap and have conducted an analysis of alternatives of proposed materiel solutions. The acquisition community developed a technology development strategy to reduce technology risk and determine the appropriate set of technologies to integrate. The Milestone A estimates are developed years prior to having mature technologies demonstrated on representative prototypes, a preliminary design, or requirements solidified in a capability development document. While estimates are valuable at this stage, WSARA requires cost and schedule baselines prior to finalizing the scope.

In the past, if cost estimates increased by 25 percent, the program manager was required to notify the milestone decision authority, typically the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, who then consulted with the Joint Requirements Oversight Council on requirements and determined if the program warranted the resources required. In WSARA, Congress added new schedule criteria, and now, exceeding cost or schedule estimates by 25 percent drives a Nunn-McCurdy breach, in which the default plan would be to terminate the program. If DoD wanted to continue with such a program, it would need to re-accomplish the Milestone A and face additional oversight, reporting, and scrutiny.

The Fallout of WSARA

Now, I will be the first to admit that DoD needs to get a tighter grip on scope and cost growth, and 25 percent cost growth on a major defense acquisition program is a significant amount, but let's take a step back and look at what WSARA truly does here. In the early stages of the acquisition life cycle, you are still defining the scope based on initial requirements, technology maturity, funding, cost, and schedule estimates. WSARA requires baselining based on the initial analysis, with severe consequences on breaching. The fidelity of the cost and schedule estimates is low due to the significant amount of unknowns with the effort.

To reduce the risk of a Nunn-McCurdy breach, program managers will now be motivated to inflate their cost and schedule estimates to account for all the unknowns and allow for more of a buffer. Yet presenting a higher cost estimate likely exceeds the current program budget, thereby raising a full funding issue. If the cost estimates are too high, leadership may decide not to continue with an otherwise valuable program. If the program *does* get approval, it will likely require funds from other sources to ensure funding is at an acceptable cost confidence level. While independent cost estimates may help keep the program manager honest, they will also be based on an undefined scope and ample unknowns. Once a program manager has an approved program

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based on inflated cost estimates, the scope and costs will naturally grow to take advantage of the increased reserves to reduce risks or add capabilities.

An Example

Let's examine a program that, by all accounts, is a well-performing, high-demand program in the early stages of the life cycle. It baselined costs and schedule at Milestone A and is maturing technologies via competitive prototypes and other early systems engineering efforts. The program manager comes to the realization that some of the critical technologies will cost more or take longer to develop than was originally planned two years ago based on initial assessments. There is full support from all key stakeholders (combatant commanders, the Pentagon, and Capitol Hill) to proceed with this program, but it must now take a bureaucratic time out.

The Joint Requirements Oversight Council will call for a series of review boards to revalidate requirements. The Office of the Secretary of Defense's director of cost assessment and program evaluation will need to conduct an in-depth cost estimate, which typically takes six months. The new director of performance assessment and root cause analysis will need to conduct a root cause analysis, and it could take months to audit the program. This is all in addition to the analysis and reviews conducted by the users, program office, program executive office staff, and Service headquarters staffs. Finally, the milestone decision authority will need to conduct additional reviews and the staffs will compile a report to submit to Congress. While WSARA dictates that a report be sent to Congress within 30 days upon the program manager notifying the milestone decision authority, no one finds that to be a realistic timeframe. It is difficult to staff a simple one-page memo through the Pentagon within 30 days, let alone a major analysis determining the fate of a major defense acquisition program. The program can either fail to meet the 30-day suspense to Congress and/or the program manager delays formal milestone decision authority notification. Congressional staffers and members will also likely call for meetings or hearings to discuss the program further.

Avoiding termination, the program is now required to spend the next six months re-accomplishing its Milestone A before it can resume technology development and prototyping. Both the Nunn-McCurdy process and re-accomplishing the previous milestone can easily delay the program a year or two, which increases costs and compounds risk. The Office of the Secretary of Defense and the Service will need to rebalance funding profiles while government and industry will reallocate resources during the delays. This scenario was all because the estimates done prior to fully understanding the program did not properly account for all the unknowns.

Focusing on Milestone B

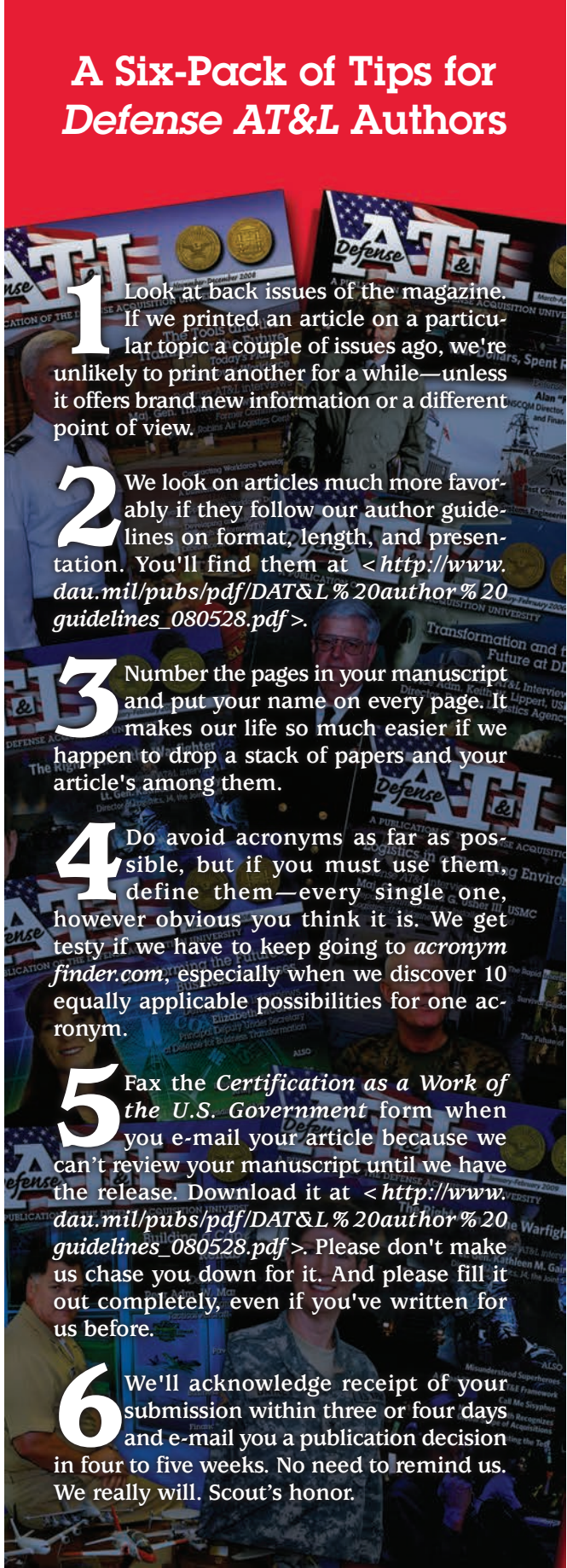
The DoD Acquisition Framework traditionally focused on the acquisition program starting at Milestone B, following ample planning and analysis of requirements, technologies, and costs as well as a sound acquisition strategy. The increased emphasis on early systems engineering, analysis of alternatives, and cost estimates helps leadership make a sound decision at Milestone B on whether to grant approval to begin development. At Milestone B, the milestone decision authority approves the acquisition program baseline, and the program manager must manage cost, schedule, and performance within those limitations. Baselining programs at Milestone A effectively forces planning and analysis to be performed years sooner. It's almost getting to the point where once someone comes up with the need for a materiel solution, he had better have all the details known the next day. If Congress reversed those aspects of WSARA, it would put the focus back on Milestone B, allowing for proper planning and still permitting the Office of the Secretary of Defense and Joint Staff to conduct checks and balances if costs or schedules grow 25 percent higher than originally estimated. It would allow for more realistic Milestone A cost and schedule estimates and reduce overall program cost and schedule risks.

A Major Concern

At a recent conference, I raised this issue to a panel of current and former senior DoD acquisition executives, and they all agreed this was a major concern that will plague the department for years. As the expanded defense acquisition bureaucracy spends the next few years defining and implementing the new roles, policies, and processes, I hope they provide feedback to Congress on these unintended consequences. The draft IMPROVE Act of 2010 on Capitol Hill these days does not address this early baselining issue, but rather adds performance metrics. We all want to develop major programs faster and cheaper, yet the bureaucracy encumbers speed and agility. If we truly want to address cost growth, we need to develop innovative approaches to streamline the bureaucracy, not expand it.

The author welcomes comments and questions and can be contacted at peter.modigliani@yahoo.com.

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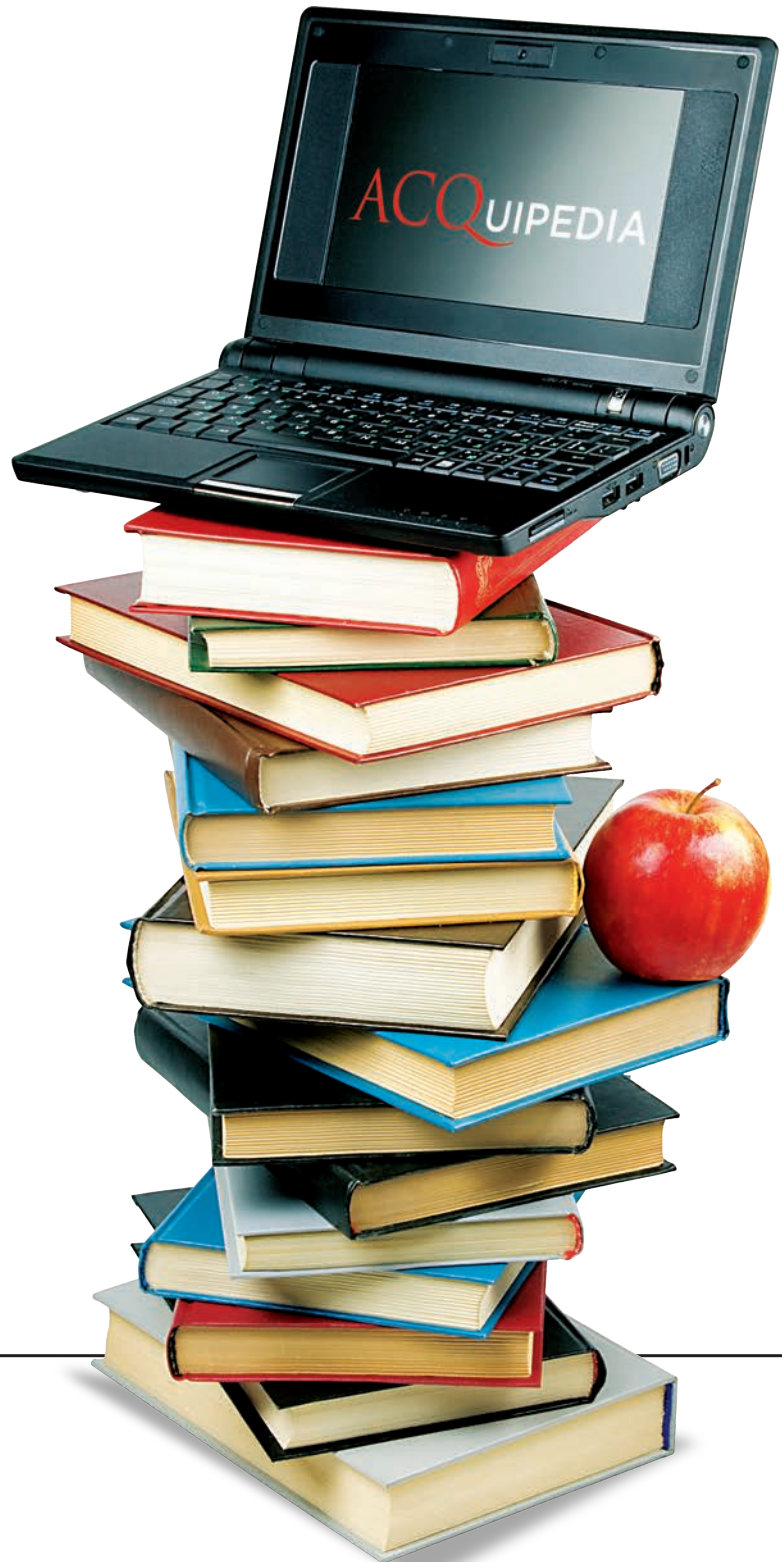
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Does MRAP Provide a Model for Acquisition Reform?

Thomas H. Miller

The capability provided by Mine Resistant Ambush Protected tactical vehicles—involving greatly improved armor protection for transporting warfighters in combat operations—is well known to the defense community at this point as well as to most of the public at large. The MRAP acquisition strategy is also well known to the defense acquisition community. Does this strategy provide a model for streamlining the acquisition process, or was it a once-in-a-lifetime set of circumstances that will likely never be repeated? In this article, I will attempt to answer that question, framing the MRAP acquisition strategy in the context of its program history and in relation to current acquisition process improvement efforts.

Miller is the program manager for the U.S. Marine Corps Medium Tactical Vehicle Replacement and Logistics Vehicle System Replacement programs within the Program Executive Office for Land Systems, and he was previously the MRAP program manager within Marine Corps Systems Command.



The Need Arises

Initial acquisition of MRAP-type vehicles by the Marine Corps Systems Command (MCSC) for the U.S. Marine Corps occurred in 2004-6 in the form of Force Protection Industries' Cougar vehicles fielded to Marine units involved in Operation Iraqi Freedom. The heavily armored trucks featured a V-shaped underbody armor package intended to protect the vehicle operators and crew from buried land mines and (then a relatively new term) improvised explosive devices. They were procured in response to an urgent universal needs statement requirement and used by explosive ordnance disposal units and engineer battalions for explosive ordnance disposal and other hazardous missions. The acronym MRAP was first used in another urgent universal needs statement submitted in 2005, although that statement resulted in the acquisition of M1114 Up-Armored High Mobility Multipurpose Wheeled Vehicles for the Marine Corps.

In anticipation of increasing demand for MRAP vehicles, based on the then-rapidly escalating IED threat in Iraq, MCSC established the Office of the Program Manager, MRAP, in 2006. The new MRAP program manager was immediately tasked with developing an acquisition strategy to address requirements in pending joint universal operational needs statements for

a total of 1,185 MRAP vehicles. Development of the acquisition strategy for rapidly acquiring and fielding the vehicles became more challenging for the Marine Corps MRAP program management office when the Army decided to add their requirements for up to 21,000 MRAP vehicles, with an initial quantity of 2,500 vehicles, just prior to release of the request for proposal in October 2006.

MRAP Acquisition Strategy

Based on detailed market research, the MRAP program manager determined that there were several mature vehicle systems in the marketplace that were potential candidates to meet the requirements outlined in the joint universal operational needs statements. None of the vendors of the systems, however, were producing them in significant quantities at that time. With the objective of getting as many vehicles to theater as quickly as possible, the acquisition strategy included a dual path for contracting: a best-value competition with plans to award firm-fixed-price indefinite delivery/indefinite quantity production contracts to all vendors considered capable of meeting test requirements (primarily survivability and automotive performance) with maximum production output; and award of a sole source contract to Force Protection Industries for enough Cougar vehicles to cover the time

estimated to conduct the competition, award the production contracts, and ensure quick delivery of proven vehicles to theater. The MRAP competitive request for proposal was released in November 2006, with the sole source contract award occurring concurrently.

The MRAP competitive acquisition was truly competitive, with 10 proposals received in December 2006. After an extremely compressed source selection, the source selection authority decided to award indefinite delivery/indefinite quantity contracts to nine qualified offerors, with orders for four initial production vehicles for survivability and automotive testing. MCSC informed the contractors of its intent to award follow-on production orders to those vendors with the highest production capability combined with proven survivability and performance assessment from government testing—those who could provide the “fastest and most-est” would gain priority for production funding. Industry responded aggressively to meet MRAP requirements, investing internal capital at risk and teaming with other industry partners to expand available production capacity in order to meet the anticipated quick production ramp up.

What Happened Next?

The MRAP program gained significant momentum when Secretary of Defense Robert Gates stated in May 2007 that the acquisition of MRAP vehicles was the highest priority program in DoD. He also established an MRAP Task Force, chaired by then-Director of Defense Research and Engineering John Young (later under secretary of defense for acquisition, logistics and technology). Gates’ direction to the task force was to “... integrate planning, analysis, and actions to accelerate over the next year the acquisition of as many MRAPs as is possible and prudent,” and “... get as many of these vehicles to our soldiers and Marines in the field as is possible in the next several months.”

An unspoken reason behind establishing the task force was to bypass the normal Pentagon acquisition bureaucracy, which Gates viewed as too slow to react to urgent war requirements. Within a year—with encouragement from Gates, engaged oversight from the task force, and active management from the Joint Program Office—a total of 2,400 MRAP vehicles were delivered to theater. Total MRAP production capacity went from 82 vehicles a month in June 2007 to 1,300 a month in December 2007. Current requirements for MRAP vehicles for all DoD services have grown to nearly 27,000 vehicles, including the latest iteration, the MRAP All-Terrain Vehicle, with more than 16,000 vehicles delivered and total expenditures close to \$30 billion.

Is MRAP a Model for Streamlining Defense Acquisition?

The rapid acquisition and fielding of life-saving MRAP vehicles is, indeed, an amazing achievement and a relatively rare success story for DoD acquisition, but does it provide a model for streamlining the defense acquisition process such

that it can be applied to all (or even most) acquisition programs? I would argue that the answer is no. The almost perfect alignment of favorable circumstances that contributed to the success of the program—consistent support from the highest level and an almost unlimited budget—cannot be replicated on most acquisition programs. In addition, MRAP benefitted from ready availability of mature vehicles that could be quickly produced and fielded. DoD program managers should, of course, pursue mature technology when available, but using that approach for all or most acquisition programs would limit access to development of technologies that are essential to fighting future wars. There are, however, lessons learned from the MRAP program that can be applied to improve the general acquisition process. The key ones, in my opinion, are the following:

Identify Requirements

Identify a baseline set of mandatory requirements—only those that are absolutely required by the user community—and let industry propose additional capabilities after demonstrating that they meet these core requirements in order to differentiate their proposals.

Select the vendor or vendors that provide the best overall value to the government. It is commonly recognized that requirements creep is a primary source of cost and schedule growth experienced by most major defense acquisition programs. It takes discipline and determination for the program management office (and often higher-level support) to limit requirements organizations to the bare minimum, technically achievable requirements set and prevent them from changing once established. The Joint Capabilities Integration and Development System requirements development system is usually not constrained by achievability or affordability determined through rigorous market research, and it is often executed by practitioners with little or no acquisition or business experience.

Program management offices commonly receive requirements documents after they are approved, with little capability to influence the establishment of key performance parameters. In the case of MRAP, initial user requirements—in the form of an urgent universal needs statement—were broadly defined in terms of operational need and cited examples of currently available mine-resistant vehicles.

The MRAP program manager, driven by the need for rapid fielding, conducted detailed market research to determine “the art of the possible” in currently available technology so as to avoid requirements that could unintentionally result in extended development time. The manager used that information to create a bare bones statement of objectives performance specification that was the basis for the MRAP request for proposal. The Government Accountability Office found that “... DoD kept the requirements simple, clear, and flexible and did not dictate a single acceptable solution.”

Does this strategy provide a model for streamlining the acquisition process, or was it a once-in-a-lifetime set of circumstances that will likely never be repeated?



After the RFP was issued, and even after award of the indefinite delivery/indefinite quantity production contracts, requirements changes required senior-level approval. As stated by Brig. Gen. Michael Brogan, MCSC commander and MRAP joint program executive officer, “That kept us from having to deal with requirements creep—with all the good ideas that people want to add later on—and allowed us to move forward very quickly.”

Avoiding Schedule Creep

Use a “schedule as an independent variable” acquisition approach. Schedule creep is another significant contributor to cost and schedule growth. Acquisition program schedules are usually established early in the program, prior to establishing a clear understanding of requirements, availability of mature technology, and finalization of the acquisition strategy; and once they are established (particularly in today’s Nunn-McCurdy environment) are hard to change thereafter. Diligent program managers then cause or compound cost growth by trying to meet unrealistic schedules, or the schedules are traded off when the programs experience the inevitable funding cut or technology challenge.

The acquisition process should allow for flexible schedules early, particularly in programs with significant development, but once the requirements are set and acquisition strategy established, the schedule should be similarly set in stone and other program factors—including requirements changes—traded against it. The MRAP program, driven by urgent operational needs, “crashed” the program schedule, accepting some additional cost and technical risk and starting initial production based on limited initial testing while continuing to concurrently conduct increasing phases of progressively more detailed testing and using those results to support placing additional, follow-on production orders. This

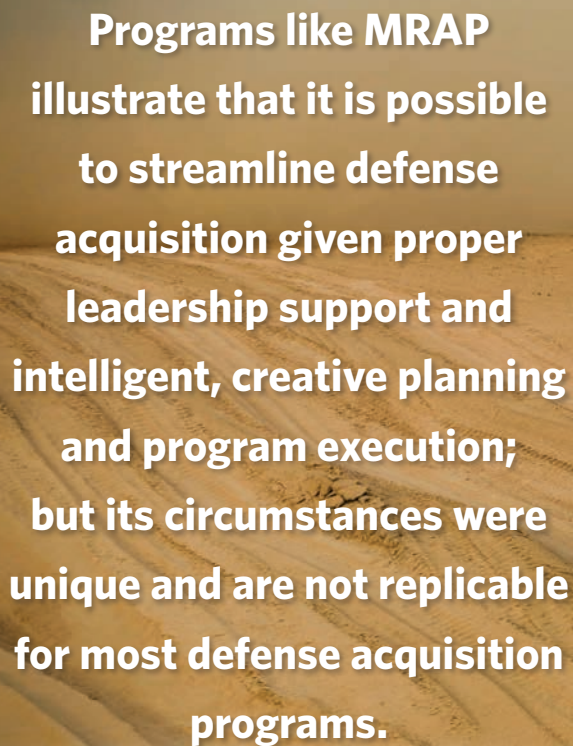
approach also demonstrates the benefit of close coordination between the program manager and requirements and testing organizations, both in program planning and execution—something that should be standard business practice in all programs. Configuration steering boards are a good mechanism to control risk in this area and should be used by program managers to resolve cost-driving requirements changes before they negatively impact the program.

Stable Funding

Stable program funding is the key to program success. MRAP, of course, had access to almost unlimited funding for vehicles, support, add-on equipment, transportation, etc. Although that is certainly unusual within defense acquisition, the program was able to avoid negative cost and schedule impacts that are common with defense programs due to continual, often arbitrary funding cuts and/or delays. Program managers usually hear about funding cuts or realignments after the fact and are made to be the bad guys when they have to explain the detrimental programmatic effects of those cuts. Unless driven by Congress, program funding should not be cut without close coordination in advance with the program management office so that decision makers understand the full impact of the cuts. The decision makers should also assess—in a true portfolio management fashion—whether it would be better to completely cut lower-priority programs rather than the usual across-the-board, “salami-slice” cut approach that is common in defense acquisition.

Leadership Support

Consistent higher-level leadership support is also essential to program success. A significant contributor to the success of the MRAP program was the consistent, across-the-board support from DoD and congressional leadership. Examples of that are the expedited approval of a DX rating (the high-



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est national priority rating) and establishment of the MRAP Task Force to deal with impediments to quick production ramp up. Less apparent examples include leadership support in fighting off the usual bureaucratic and political speed bumps experienced by most acquisition programs. Although as stated in the GAO report, “Not every program can be a highest priority...,” program managers should strategically use support from the program executive officer/milestone decision authority (and higher—as high as possible) leadership to identify and resolve barriers (such as requirements changes, test delays, etc.) and take appropriate risks to expedite fielding of required equipment. Similarly, DoD leadership in all organizations (requirements, acquisition, testing, and finance) should be responsible for advocating program success, making decisions, and taking prompt action accordingly at the request of the program management office.

I would also note and encourage other programs to copy the creativity used by the MRAP program management office and DoD leadership in developing and executing their acquisition strategy. Program managers should be encouraged to take strategic risks and make trades that result in getting urgent equipment into the hands of the warfighter as quickly as possible. Creative thinking is a key capability in this regard. The MRAP program manager and MCSC decided to mitigate risk of delay from protests by awarding contracts to all vendors that proposed and had even an

outside chance to meet test and production requirements. The trade in this regard was higher upfront cost in terms of funding for initial production and test. Again, this approach is not something that can be applied in all programs, but it made sense for MRAP and is an example of creative acquisition approaches that are possible but are too often stifled in the standard, highly regimented, legislatively controlled acquisition process.

A Suggestion for Implementing Changes

Programs like MRAP illustrate that it is possible to streamline defense acquisition given proper leadership support and intelligent, creative planning and program execution; but its circumstances were unique and are not replicable for most defense acquisition programs. I would argue, however, that the defense acquisition process could be significantly expedited through application of the lessons learned from the MRAP program. But how is this to be done, given that attempts to streamline the acquisition process have been many and frequent but seldom successful?

One method to consider is to create a separate, unique acquisition process for equipment and/or services required to meet truly urgent operational needs. This would be the equivalent of the Clear® lanes that allowed priority, pre-qualified customers to bypass normal airport security and speed through to the gate. Such a process would require approval for application based on documented urgency and service commitment, but once approved, would allow program managers to tailor program documentation, provide for designation of top leadership sponsors for the program, include a streamlined requirements development process, and help mitigate program funding instability. Establishing that type of unique, streamlined process—used only in limited circumstances—could be successful where previous attempts to reform the standard acquisition process failed. The GAO report on MRAP supported such a change, and in fact, advocated establishing a new agency (the “Rapid Acquisition and Fielding Agency” as recommended previously by the Defense Acquisition Performance Assessment Panel) to oversee and execute the process.

Given the current consensus that the defense acquisition system is not working, particularly in terms of the consistent delays experienced in fielding urgently needed warfighter materiel, now is the time to pursue a change as I have advocated in this article. MRAP is a case in point, as it was successful primarily due to Gates establishing a process outside of the normal bureaucracy. The success can be replicated and standardized through creating a standalone process that allows program managers and defense acquisition leadership to focus resources on rapid fielding of equipment where it is most urgently required.

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International Competencies for the Defense Acquisition Workforce

Richard Kwatnoski ■ Gregory Goodwin

America's ability to shape the world this century will depend on the quality of its leaders. Yet the nation is producing too few future leaders who combine substantive depth with international experience and outlook. So, too, managers with a broad strategic vision in a rapidly changing world are in short supply. Excerpt from the 2003 RAND Corporation study, "New Challenges for International Leadership"

Although countless articles and papers have been written about the post-Cold War, post-Sept. 11, 2001, changing dynamics of global affairs, the literature and dialogue are sparse concerning the international competencies of the U.S. government officials who have an active role in these changing dynamics. The 2003 RAND Corporation study, "New Challenges for International Leadership," highlights that important point, stating:

The United States confronts a world that is both networked and fractured, both full of promise and full of danger. The global role of the United States in the century ahead will require both breadth and depth. It will demand deep understanding of particular languages and cultures, including those from whence danger might arise, as well as broad, strategic perspectives on the economic and political forces that will shape the world.

The statement summarizes the fact that global interconnectedness is required for successful governance. The purpose of this article is to describe that with such changing global dynamics, it is imperative that the civilian sector of the U.S. government develop and sustain a training program to reflect a growing demand for international competency in governance operations. Expanding the curricula of the International Acquisition Career Path (IACP) for the defense acquisition workforce is a positive step in this direction.

International Competencies

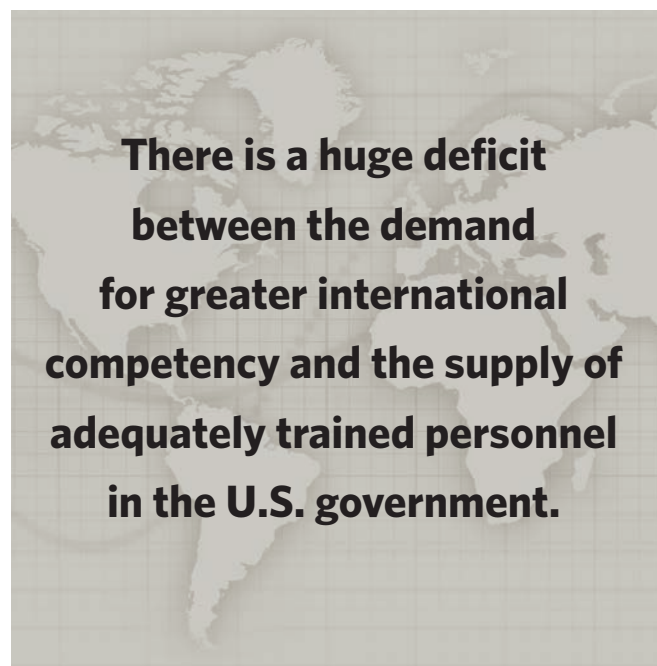
The first question to ask when confronting the competencies issue is what is a competency? Daniel Spikes and John Stroup, experts in the field of federal executive leadership, define competency as a "constructed image of a particular skill set of behaviors that can be synthesized under a single heading." They would further define international competencies as subsets of "multi- or cross-cultural knowledge, foreign policy, protocol and etiquette, and ambiguity of expectations." With those definitions serving as a baseline, the second question to ask is what is the current state of U.S. government civilian leadership in the field of international competency? The answer is unsatisfying. Michael Rawlings, an instructor at the Federal Executive Institute, states that 75 percent of U.S. civil service members whose job responsibilities had U.S. policy implications reported that their work has international implications. Yet pulling data from a similar Federal Executive Institute survey, he writes that 60 percent of U.S. civil service and senior executive service employees said that they received no formal training for international projects, and that more than 67 percent rated their proficiency at a two (on a scale of five) on a range of critical executive competencies. According to Stroup, those

competencies include culture, customs, and history; knowledge of international government operations and officials; best practices for international work, travel, and living; and expectations of international government executives.

A Huge Deficit

Within the defense acquisition workforce, the pattern is quite similar, if not more pronounced. In 2009, the program management career field population for the DoD components totaled 13,422 civilian and military personnel. (In this article, DoD components are defined as Army; Navy; Air Force; and the Fourth Estate, which is composed of all DoD organizations, agencies, and field activities not belonging to one of the military departments.) Of that number, slightly over 400 positions, or 3 percent, of the program management component of the defense acquisition workforce, are identified and coded Level III in international acquisition, qualifying them to conduct and manage international acquisition programs. International training remains optional, or assignment-specific, for the remaining 120,000 members of the defense acquisition workforce not in the program management career field.

Clearly there is a huge deficit between the demand for greater international competency and the supply of adequately trained personnel in the U.S. government, and the Department of Defense is no exception. Unfortunately, the deficit is not just noticed by scholars; it is also noticed by key U.S. allies, often to a negative effect. Yoon-kee Chung, a South Korean government executive who was a visiting



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executive-in-residence at the Federal Executive Institute for approximately 18 months, commented on this deficit:

The United States is a super-large country, and the scale of its territory makes it difficult for people living there to understand how well the world is networked, which is obviously observable outside of the United States. Global perspective is critical to being a member of the networking world, because no country can stand alone in this international network. Ignorance or indifference to international affairs and foreign culture can have significant consequences.

A New Perspective

To rectify this issue, what needs to be done? First and foremost, it is beneficial to *think internationally*. More than 25 years ago, European experts devised seven core competencies agreed upon for successful international management. Developing a common set of core competencies has been vital in increasing the level of cooperation and integration throughout Europe over the last few decades. In fact, those core competencies have proven so successful that they have been adopted by the U.S. Foreign Service. The seven competencies are:

- Be open minded
- Be innovative
- Possess integrity
- Possess social skills
- Possess communication skills
- Be result driven
- Possess knowledge at different levels.

It would be easy to misinterpret international competencies as being domestic competencies, but there are stark differences. Professor Joyce Osland, a professor of management at San Jose State University specializing in global leadership, women's leadership, and intercultural competence, noted, "The term 'global' encompasses more than simple geographic reach in terms of business operation. It also includes the notion of *cultural reach* in terms of people and *intellectual reach* in the development of a global mindset." That means that developing international competencies does not just involve acquiring new skills; rather, it means acquiring new skills *and perspectives*. Such international perspectives can add great value to how DoD, through its defense acquisition workforce, does business at home and abroad.

The Need for International Competencies

At this opportune time, there is a substantial increase in both the supply and demand for increased development in international competency. On the supply side, note that from a 2007 Federal Executive Institute poll, 65 percent of U.S. federal executives indicated an interest in learning more about the role of the United States in international affairs. Fifty-five percent polled indicated interest in learning more about the

international economic system and its global impact, and 47 percent wanted to learn more about the image of the United States in the world. The poll went on to add that 68 percent wanted to increase their knowledge on cross-cultural sensitivities, 50 percent on international protocol and etiquette, and 54 percent on developing international negotiation skills.

On the demand side, noted journalist Roxana Tiron of The-Hill.com reported that President Barack Obama has ordered an extensive interagency review of export controls, and Rep. Howard Berman, the chair of the House Foreign Relations Committee, said that he will introduce legislation to overhaul the present system. Defense experts are confident this new effort will succeed, as it is a top-down initiative rather than a bottom-up one. If the system truly does change, it will be incumbent upon the defense acquisition workforce, along with other cabinet-level departments, to implement any new reforms.

Where to Get Training

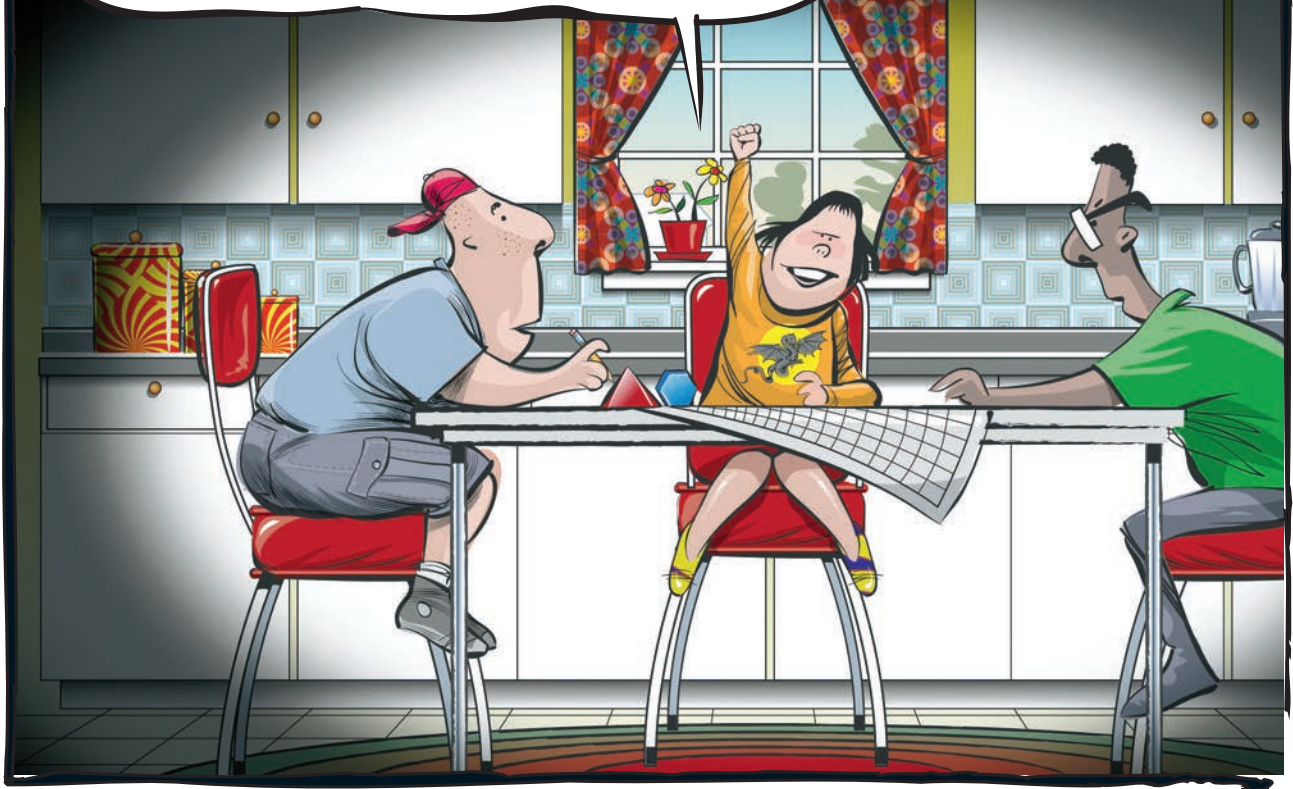
Where would it be possible to acquire these aforementioned international competencies, especially for those in the defense acquisition workforce? The answer lies with the Defense Acquisition University and its IACP classes. In addition to the many months of required program manager training, the IACP currently requires three one-week resident courses: Multinational Program Management (PMT 202), International Security and Technology Transfer/Control (PMT 203), and Advanced International Management Workshop (PMT 304) to attain Level III Program Manager-International Acquisition (PM-IA) certification. All three courses emphasize relevant U.S. international policy and law, but the curricula falls short in one regard, as the courses provide the information predominantly from a U.S. viewpoint.

That said, it is now time to consider moving beyond the bounds of Level III PM-IA certification to an executive level of training by providing professional development opportunities. At that proposed new level, learning the perspective of foreign policy, negotiation, and law would be emphasized, but from other national perspectives. The value added would be that international competency in such areas as program management, international agreements, technology transfer, and export control would help expedite U.S. agreements and projects/programs with international partners as well as advance U.S. interests. By having trained, educated, and experienced acquisition executives with international perspectives, the defense acquisition workforce could meet the needs of a globally changing world, all the while maximizing U.S. national security.

The Need for Training

Changing global dynamics that have led to increasing global interconnectedness now make it imperative for the U.S. government to develop and sustain a professional development program to meet a growing demand for international competency in governance operations. Expanding the curricula to the executive level along the IACP can be a positive step

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Dungeons, Dragons, and Developers

in accomplishing that goal. As a final rebuttal, Spikes and Stroup state from their work, "Competencies for Success in International Leadership in Challenging Times:"

Let us put to rest the notion that a federal manager can do his or her work without the international skills, knowledge, and temperament required to do the public sector work. As our results show, 75% of the respondents incorporate some international factors into their work and responsibilities. To garner and enhance these capacities, we also must first adopt a culture of management training. The development of international capacities must become an integrated goal among leaders across government. As the results demonstrate, federal executives and their agencies also should take international competencies seriously because senior officials in the public sector perceive the need for it.

As the president is seeking new reforms on export controls, and as international cooperation is increasingly required in the defense acquisition world, the United States needs to remain globally competitive, relevant, and secure in this area. The threat of the United States being left behind and dominated in the global arena is far too great a risk to bear. Therefore, it is necessary for U.S. government executives to adapt to an international environment. Not doing so comes at great risk to our overall national security.

The authors welcome comments and questions and can be contacted at richard.kwatnoski@osd.mil and gregory.goodwin@osd.mil.



The Information Technology Program Manager's Dilemma

Rapidly Evolving Technology and
Stagnant Processes

Kathy Peake



ince inception, the Department of Defense's development of acquisition policies and guidance has been focused on the creation and deployment of traditional weapons systems—such as planes, ground vehicles, and ships—in support of the warfighter. Some may see

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Treating IT programs in an “out of sight, out of mind” manner with no real dedication of time and attention to the problems is not the answer in the face of changing technology and adversity.

Information Technology Acquisition Challenge

By far, the biggest challenge to IT programs is the rate at which technology changes. Ray Kurzweil, in his essay “The Law of Accelerating Returns,” builds on Moore’s Law (exponential growth in the number of transistors per integrated circuit) to describe what he calls the exponential rate of technological change. In fact, Kurzweil goes on to suggest that the rate of technological growth is itself growing exponentially. That is clearly demonstrated when one considers the Internet. Until the early 1990s, the Internet didn’t exist in its current form. Since that time, there have been tremendous improvements in technologies and capabilities for the Internet.

As IT develops in the commercial market, new capabilities are generated in a matter of months. DoD is not isolated from this changing environment, as the department is heavily reliant on commercially available software and hardware. As a result, there are challenges in maintaining support for older software and hardware products, obstacles to overcome with the procurement of new products, and the subsequent integration into defense systems. Most of the time, those are not insignificant or superfluous enhancements to performance. As new technology emerges, older technology becomes obsolete, seemingly overnight, and users usually want the latest technology, either due to an increase in functionality or as a requirement to patch a discovered vulnerability, cyber threat, or incompatibility created by other emerging capabilities.

For example, *The Wall Street Journal* reported recently that insurgents were able to gain access to video feeds provided by U.S. military unmanned aerial vehicles using a software package that was publicly available. That presented an emerging threat as the insurgents were able to use the technology to their advantage and gain access to critical information. As a result of that threat, users initiated a new requirement to secure the transmission of data. This single example demonstrates that the rate of change to technology and its availability become forces of change in many defense programs.

The rapid rate of changes in technology further complicates an already complex acquisition process from the very first step—the definition of requirements. DoDI 5000.02 requires a fixed set of requirements prior to proceeding through the process. Those fixed requirements feed into the acquisition process—a process that typically takes a long time to develop into a system. As already noted, once a requirement has been defined, it is only a short matter of time before that requirement becomes obsolete either because of advancement in technology or a discovered vulnerability that requires it to be replaced or modified. Under DoDI 5000.02, that leads to unplanned costs, requirements growth, and systemic issues associated with modifying requirements during the acquisition process.

the existing DoD process for acquiring those systems as complex; however, the current procedures, as outlined in DoD Instruction 5000.02, offer a more defined approach for weapons systems acquisition than for the acquisition of information technology systems. The current DoDI 5000.02 leaves IT project and program managers wondering how the current process applies to them, as the guidance is fairly rigid and does not allow for the flexibility required to appropriately manage IT programs.

Until very recently, in comparison to the development of a traditional weapons system, IT programs seemed to have been viewed as a utility or service instead of a critical component to national security. Perhaps that is because data passing through cables cannot be observed with the naked senses and therefore an “out of sight, out of mind” philosophy is applied when it comes to policy and guidance. It seems as though managers and decision makers who are not familiar with IT take the stance of “I don’t understand it, just make it work.”

At a recent conference, military leaders admitted that they did not completely understand the role of IT in operations; however, with so much attention being brought to the issue, that may be changing. Operational commanders are now realizing that they have a real need to understand IT as it affects operations and the decisions regarding IT that are being made by others. As with weapons systems, the solution for IT acquisition program managers is to tailor the DoDI 5000.02 to their perspective programs. That does not, however, address the three major issues associated with information technology programs: the rate of technological improvements in capability, the processes for both acquiring and fielding new IT components, and funding for IT programs.

Obsolescence is an issue that is problematic for weapons systems as well; however, replacing a few obsolete components on a weapons system is very different from having an entire system that is made up of components that face repetitive obsolescence. That is one reason requirements tend to remain in a state of fluctuation in many IT-intensive programs.

Taking a stance of demanding firm, fixed requirements that stay relatively static over a two-to-five year period is unrealistic with IT-intensive programs. Thus, a change in mindset along with an acquisition process that anticipates that there will be ever changing requirements is needed.

Rapid Change and Undefined Processes

Development, deployment, and operational processes surrounding IT programs need to be considered given the dynamic nature of technology. A lack of defined processes supporting an IT program at the program, component, or Service level can lead to challenges for a program manager, resulting in significant delays, cost overruns, and performance problems in the program.

Beginning with the most fundamental function of contracting, rapid and frequent changes require that a well-written contract be in place for those types of programs. If the program's contract is not well written, most improvements in capability will be deemed new requirements and have to undergo a contract modification process. A modification process can be problematic, as the negotiations for a bilateral modification can take a great deal of time. Furthermore, by the time negotiations are completed, the product or capability being acquired can be obsolete due to emerging technological developments. Contracts for IT need to be well written to accommodate the rapid rate of technological advancements, and contracting modification processes need to be flexible and streamlined so as to not impede the timeliness in which the new technology can be implemented. For example, identify those things that are likely to change rapidly and have a predetermined method of getting them on the contract. That can be done via a contract line item number that encompasses peripheral devices, for instance, where the contract line item number doesn't change but the devices do change with upgrades to them.

Another process that needs to be considered is the systems engineering process. As described earlier, obsolescence of software and hardware becomes a challenging issue. Frequent updates in technology require a mechanism to simultaneously support multiple baselines until updates can be completed as well as support the upgrading or updating process itself.

As an example, consider the number of computers in DoD that currently operate using the latest version of the Microsoft® operating system. Now imagine that Microsoft decides to no longer support the existing version of its operating

system—this frequently happens because the driving force behind Microsoft's profitability is the commercial market. With every new release of operating system, patch, etc. ... all of the computers in DoD will need to be upgraded with the latest product available exclusively from Microsoft. In large IT programs, that could mean upgrading hundreds of thousands of computers within a specified timeline. Upgrading a single component or piece of software can cause unforeseen compatibility and interoperability problems in the system and with its legacy systems. In order to prevent those problems, it is necessary to have a sound systems engineering and testing process before a change of this magnitude is implemented.

Users are also impacted by technology refresh as it can be very disruptive to their normal work routine. Users have to learn how to use the new technology and possibly change how they previously performed their tasks. Therefore, technology refresh can be considered a taxing event for everyone involved. Also, if the users are all co-located at an operational command, the upgrade may negatively impact a command's ability to perform its mission. Thinking ahead about the program's strategy, having a good systems engineering process, developing a well-thought-out technology refresh process, and obtaining stakeholder support for the process are critical for success.

Of course, one has to discuss the impacts of information assurance when discussing an IT-intensive program or project. This is yet another process area that requires a very thorough strategy and plan and stakeholder support. The personnel involved in approving the system's security and authority to operate—like the Service-specific designated approval authorities—are typically not part of the program or project, and that creates a very time-consuming process with limited resources.

There are many things that can be done to streamline the approval process, some of which have been successfully implemented in other major automated information systems

A vision for IT is needed at the DoD enterprise level that translates to a Service perspective and moves down to the individual program office.

programs. For example, prior to seeing the actual authority to connect a request, the designated approval authority can ensure that one of its stakeholders is present during testing of the system, upgrade, or patch, ensuring that the representative understands what the device is and its vulnerabilities. Embarking on the development and fielding of an IT-intensive system without early coordination and cooperation of those representatives has the potential to delay the program's objectives for months.

In some instances the lack of defined processes is beyond the program or project manager's control. For example, an IT system may need to be compatible with other applications being developed by other program offices. In such instances, coordination between agencies is required at the Service level.

Funding for Constant Change

DoD's planning, programming, budgeting, and execution (PPBE) process is another element that does not function well with the rapid pace of technology advancements. Because the rapid pace of technology improvements cannot be forecasted or planned, IT program managers are left with the problem of identifying funds to implement necessary information technology changes. To quote Deputy Secretary of Defense William Lynn during an interview with *Government Executive Magazine* and noted in a Nov. 12, 2009, nextgov.com article, "The iPhone was developed in less time than it takes for DoD to budget for an IT program." Also, funding upgrades created because of a newly discovered vulnerability or hacker attacks are impossible to predict two to five years in the future. With no management reserves allowed in DoD, that poses a significant challenge for those responsible for managing IT programs—how does one budget for the unknown requirements? Currently, the only possible answer is to continually miss budget targets and escalate costs to higher levels within the government and for Congress to provide additional funds as needed. That is not the most desirable approach and can be time consuming. The government budgeting process requires a fundamental shift to be more flexible and responsive in order to accommodate fast-moving programs.

In the area of process and governance, DoD could learn from the private sector, or perhaps it needs to rely on industry to bring their expertise to the government. There are governance models for IT such as Control Objectives for Information and related Technology (COBIT) and the Information Technology Infrastructure Library (ITIL), both of which recognize the need for flexibility. Also, corporations are in business to make a profit, and in the past decade or so, they have realized the important role that IT plays in their ability to remain competitive in the marketplace. Corporations also have concerns about technology changes, hackers stealing corporate sensitive information, budgets, and planning capital investments. Corporations tend to have an IT strategy that is in alignment with their goals and objectives.

Change Requires Change

Managing the rapid rate of advancement in technology in IT-intensive programs presents many new situations that have never been encountered. The examples cited in this article are only a small set of the challenges associated with the acquisition of IT and can be difficult to convey to senior managers, approval authorities, and policymakers who lack familiarity with those challenges and IT in general.

A vision for IT is needed at the DoD enterprise level that translates to a Service perspective and moves down to the individual program office. Working toward a common vision, a new acquisition process needs to be flexible enough to anticipate change. Those changes lead to adjustments in requirements and require that well-thought-out processes be in place prior to starting an IT-intensive program. Early on before contract award, consideration for how the changes will be managed, tested, and implemented need to be taken into account, and the program office must also identify key stakeholders who need to participate in the decision-making process at the working level. All of those things require that the program manager have support at the component and DoD levels to help coordinate and establish those processes that may be outside of his or her control.

The PPBE process is no exception to the need for a more responsive process. Response to rapid change requires flexibility in programming and budgeting. Perhaps a different PPBE process or a capital investment budgeting process needs to be in place to help fund the changes. An example may be to use the private sector model where the budgeting process is in alignment with an overall corporate IT objective. Objectives are budgeted for and funded by annually updated capital spending plans. Because the PPBE process is not more accommodating to change, it will continue to create challenges for IT acquisition programs and they will remain unresponsive to change and vulnerable to widely available emerging threats.

Once an acquisition process has been developed, then IT-acquisition-specific training should be developed and provided. Program managers currently must attend Defense Acquisition University courses for level III certification in program management. Given that more and more systems are becoming IT intensive, additional coverage for managing those programs should be part of that training.

Most important, treating IT programs in an "out of sight, out of mind" manner with no real dedication of time and attention to the problems is not the answer in the face of changing technology and adversity. What is needed now is dedication by senior government officials who recognize the issues being caused by the current processes and can affect the needed change in those processes.

The author welcomes comments and questions and can be contacted at kathy.peake@dau.mil.

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The Light Air Recon system is right on track.

LAR Program Review

Lt. Nano

We passed our eval with flying colors — two months early...

Cap'n Cannonball

And we're under budget by 30% — Here's some money back!

The Adirondack Kid

Our simple approach allows us to deliver the first 300 units... What is that?!

Extraordinary Girl

FIST versus the **Incredible Inevitable!**

ROAR!

FOOLS! Everyone knows military technology takes a long time, costs a lot, and is very complicated!

This LAR is just a toy! But I'll make it a real weapon.

Is that an ICBM he's installing under the wing?

Your requirements are overstated!

Oh no! He's turning the LAR into a Laser Attack Recon and Global Effect System — a LARGE! But that's not what the customer wanted!

All this added complexity creates a point of diminishing returns!*

*The Defense Procurement Mess, Gregory, 1989

**Faster, Better, Cheaper; McCurdy, 2001

Faster, Better, Cheaper — Pick None! Ha! Ha! Ha!

Who is this guy?

The Incredible Inevitable — My old nemesis! Keep your paws off the LAR!



Nobody can resist the **inevitable!**

You can't stop my **momentum!**



That's what you think, you **steroidal behemoth!** One fastball special should do the trick!

Say hello to my little friend!



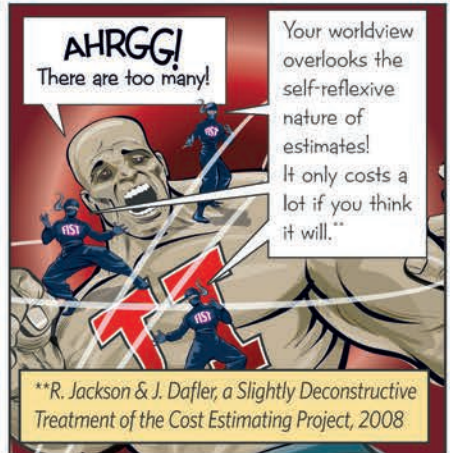
Lt Nano flies through the air...



...and splits into a dozen tiny ninjas.

We won't let your bad theories destroy our good practices!

**Sumantra Ghoshal, Academy of Management Learning & Education, 2005*



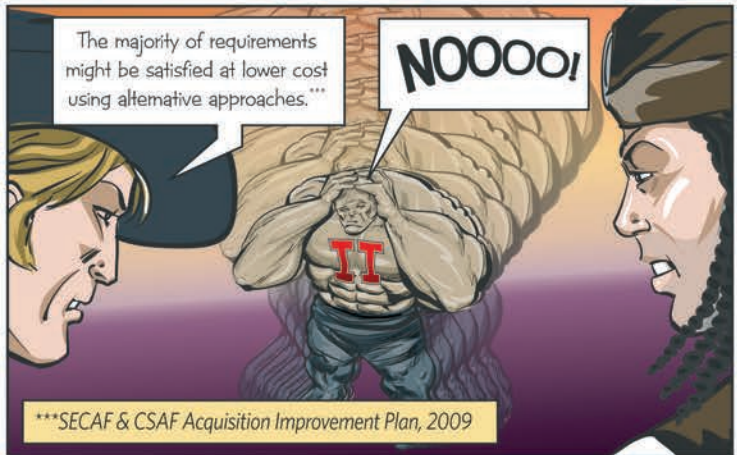
AHRGG! There are too many!

Your worldview overlooks the self-reflexive nature of estimates! It only costs a lot if you think it will."

***R. Jackson & J. Dafler, a Slightly Deconstructive Treatment of the Cost Estimating Project, 2008*



Nice work, Lt. Nano! You held him off long enough for us to finish the LAR.



The majority of requirements might be satisfied at lower cost using alternative approaches."

NOOOO!

****SECAF & CSAF Acquisition Improvement Plan, 2009*



Looks like he wasn't inevitable after all.

And not very incredible either.

Yeah, more like un-credible!

Oh, Lt. Nano... Ha ha ha ha!

Tune in next time, when we'll hear Cap'n Cannonball say, "Hey guys, wait for me!"



Does Anybody Out There Understand the Requirements Process?

Mikael S. Beno



eginning in 1993, over the course of more than a year, a group of 14 individuals from Air Force Space Command and the Space and Missile Systems Center pursued a charter established by senior Air Force officials. Their primary goal was to determine what was wrong with the requirements process and make recommendations to fix it. In the course of developing recommendations, many experts from the field were invited to present their perspective. Individuals came from the Defense Systems Management College, the Air Force Institute of Technology, the Air Force Office of Aerospace Studies, individual program directors and managers from a number of system program offices, different major command requirements personnel, and even a noted expert and author in space requirements and architecture from the U.S. Air Force Academy. The findings were extensive and, for

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What's wrong with the requirements process? Is the process still broken?

Few people understand the complex nature of the requirements process, resulting in major program problems later on in the acquisition phases.

Where can one go to find (study) the requirements process? Is the process definitively laid out in any documents? If you look into the DoD 5000 series or even the latest AFI 10-6 (or AFPD 10-601), which specifically addresses requirements, there does not appear to be anything called a requirements process. What one will find is something called “evolutionary requirements definition,” which basically states that requirements begin very broadly and are more and more defined as time goes on. Some very top-level requirements-type activities are mentioned (such as the mission area assessment [MAA], also known as “strategy-to-task” analysis), but how one actually accomplishes the tasks is left to the reader—not very edifying. There is also mention of a planning process and an acquisition process, and both seem to contain portions of what one might assume are requirements tasks.

Fortunately, since these observations were noted in the 1994 timeframe, some progress has been made. The old requirements regulation (AFR 57-1) indicated that MAAs were a continuous process. One could assume from that statement that a major command’s planning shop would have a cadre of professionals accomplishing the tasks. The facts were that some major commands had never accomplished a MAA. Since then, some major commands have been putting more resources into upfront requirements analysis such as MAAs, so there appears to be some progress. Nonetheless, in order to determine if anything has changed, shouldn’t DoD’s first focus be on how effective Services are in ensuring that their people understand the process?

Today, many senior leaders are exposing the methodology of retired Lt. Gen. Glenn Kent, director of the Weapons Systems Evaluation Group in the 1970s. His strategies-to-task process appears to have been embraced by much of the Air Force senior leadership, if not by all of DoD, as the way to link national objectives to acquisition programs. Without that linkage, it is argued that the need for new weapons systems cannot be connected to battlefield outcomes and, as a result, will not receive the priority required in the program-planning-budgeting system to obtain funds. Review of the systems under development indicate few systems underwent that or any similar type of approach.

Few people follow the process, even at the macro level, as laid out by regulation.

A frustrating fact is that for those few who understand the process, it is rarely followed. The requirements process starts with taking what is known of national objectives and determining what the military objectives should be. In order to accomplish those objectives, the military has to be able to accomplish specific tasks. That is the MAA pro-

cess of interpretation, were divided into six broad categories: training; documentation; responsibilities/resources; planning and teamwork; customer satisfaction; and modifications, upgrades, and follow-on programs. That study was used as the basis for the comments in this article.

What’s wrong with the requirements process? Is the process still broken? Those questions raised significant problems in the early 1990s and continue to be asked today by people from all military services. The requirements process is inextricably tied to other key questions in the acquisition environment, such as why does it take so long to field systems and why are costs seemingly always much higher than predicted?

I would like to know if any of the problems we saw in the early 1990s have been solved (and whether any of the recommendations have been enacted and are useful). Did the new Joint Capabilities Integration and Development System approved on June 24, 2003, actually improve anything or did the same problems simply get rearranged under new titles? Is the requirements process still broken?

In order to systematically analyze and provide potential solutions to such a complex problem, this article follows a specific format. A problem is asserted, and then is followed up with data, analysis, and, in some cases, recommendations. All of these comments were derived from the Space Command study accomplished in the early 1990s.

cess (strategy-to-task analysis). Commanders determine the objectives each year using a variety of techniques and sources of data, to include the Defense Planning Guidance, which lays out broad objectives for the military. It is the theater commander's (or major command's/combatant commander's) job to translate that guidance into a list of specific tasks. Once a list of tasks is developed, the forces to implement the tasks are determined—called “task to need,” or mission need analysis (MNA). During that phase, operational scenarios are modeled, and computer simulations run using existing and planned forces to meet the objectives of the Defense Planning Guidance.

Those wargaming exercises result in success or failure. Failures result first in changes in tactics, organization, operational concepts, doctrine or training, and non-material solutions. Significant, and hopefully obvious, is the need for a concept of operations, or CONOPs (i.e., how forces are employed and deployed, maintained, operated, pre-positioned, etc.) The very last consideration to resolve a deficiency is a material solution. That requires the writing of a mission need statement (MNS), which, in very broad terms, indicates the mission deficiency. It is not solution-oriented although it may list potential alternatives. All of that information can be found in the regulations (if you look hard enough), so what's the problem? The answer is simple: It is rarely followed. There are many cases in which the MAA, CONOPs, or MNA is not accomplished, but a requirement is identified and a MNS is written! How does that happen?

There are two ways in which a MNS might be written without going through the MAA/MNA process. First, it could be that a new technology has been developed and a user wants to take advantage of it. Secondly, a fielded product may not be performing as previously planned and a substitute must be found. Unfortunately, most MNSes result from technology push, and that causes its own problems.

Technology MNS without linkage to operational objectives and the rigors of the MAA/MNA process results in products that are difficult, if not impossible, to assess in terms of operational suitability. If the mission effectiveness of the end product was not run through the operational scenarios (models and wargames), acquisition personnel won't know how well the system meets the need. That is the first and foundational problem with acquisition programs today.

There is a failure between user and developer to communicate or work as a team.

The question the developer asks should not be just, “What does the user want?” as if anything asked for will be provided. In these times of defense spending cutbacks, cost is a major limiting factor. A good customer-supplier relationship demands a more detailed understanding. Better and more fundamental questions are, “What is the mission (operational objectives, environment, etc.)?” and “How

do I know when the product is good enough?” If the user does not provide enough operational information—such as a CONOPs—and the mission objectives to the developer, then the user is not going to get an optimal system. That is because with the seemingly omnipresent shortage of funds, tradeoffs almost always have to be made somewhere in the performance and supportability regimes.

Some users do not feel it is important that the developer know the details, and some developers conversely do not feel the user needs to know much about the design. That is flawed thinking. Systems are complex, and decisions and tradeoffs due to performance and cost must be made continuously. Design trades must have the support of the user. The solution is simple—complete communication using an integrated product team approach.

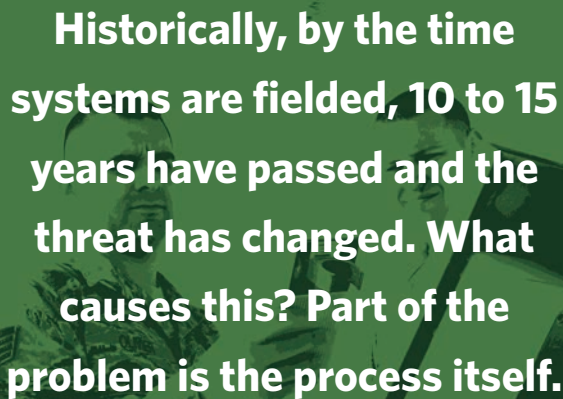
The user is now in charge of all work up to Milestone 1 (now called Milestone B)—and that is a fundamental mistake.

Both the material solution analysis (MSA) phase (MAA/MNA/MNS) and the technology development phase prior to Milestone B are run by the user. That is a mistake because the functions that occur during the phase are acquisition-specific. For example, alternatives are analyzed, cost reports are generated, tradeoffs are conducted, and preparation for the Milestone B Defense Acquisition Board review with all the associated acquisition documentation must take place.

One of the documents that must be generated is the cost and operational effectiveness report (cost and operational effectiveness analysis [COEA], now called the analysis of alternatives [AoA]). Some would say that the COEA is the most critical document to be developed in that it is the basis for the commander's decision on which alternative to pursue. The user, in most cases, does not have the technical or business experience to lead those efforts. In addition, they do not have the funds to pay for the COEA, as research and development dollars are used to fund contractor studies that operational commands do not have.

Weapons are complex and costly. To ensure that proper decisions are made, the phase should be overseen by those who understand the acquisition and requirements process, which in itself is very complex. An analogy is that because I drive a car, I should be able to build one. It doesn't make sense. This position does not mean the final decisions and the structure of the acquisition should not be approved by the major command/combatant commander. The user must have the final decision.

If we must continue with the process as is, then the user commands must be trained in not only the requirements process but the acquisition process as well. The complexity of the acquisition process coupled with the turnover in user personnel does not bode well for success in this area.



Historically, by the time systems are fielded, 10 to 15 years have passed and the threat has changed. What causes this? Part of the problem is the process itself.

The impact of unscientific (political) decisions is a major problem.

All of DoD labors under a process that is fraught with special interests, service parochialism, personalities, and disregard or lack of understanding on the impact of arbitrary decisions. There have been numerous studies and reports on that problem, from the inspector general, the Defense Management Review, and the Government Accountability Office as well as the Goldwaters-Nichols Act, all addressing a variety of concerns for the process by which requirements are formulated. Mechanisms can be set up to minimize the impact of what we'll call "unscientific" decisions, but the naked truth is that these problems, in some cases, do not lend themselves to an easy solution. Rather, they are issues that have to do with human nature and, as such, are difficult at best to regulate.

At a minimum, decisions must be documented in a traceability tool that links design back to the original deficiency. The traceability tool provides the pedigree of the decision. Although these tools existed in 1991, few were employed. Requirements traceability tools should be mandated on all programs.

Weapons systems should result from the study of alternatives (COEA/AoA), which should be composed of potential solutions from all Services (not just one).

Effective concept analysis involves looking at the potential of widely differing systems—including Army, Navy, or Air Force programs—to solve the deficiency. Unfortunately, that rarely happens. Instead, depending on which Service is leading, the study of alternatives usually involves looking at similar systems. For example, instead of looking at a ship versus a satellite versus a tank, the tendency is to look at five different types of ships. The Joint Requirements Oversight Council (JROC) was formed for several reasons, but in particular for ensuring the MNS looked at building systems for multiple Services for the simple purpose of

saving money. There is a general sense that for whatever reason, the JROC is not solving this specific problem. The system is not set up to take the mission deficiency of one Service and force its use on another.

Services see mission deficiencies and the justifications for new starts as their ticket into the budget process. It is difficult to expect military services to advocate a system that potentially would result in another military service obtaining the program. Call it parochialism, Service loyalty, whatever; it is just not going to happen unless an organization above the Service level does it. Currently, both the JROC and the Defense Acquisition Board have the opportunity to review and ensure that other-than-Service-unique alternatives are addressed in the MSA phase (prior to Milestone A). As such, should DoD explore the benefits of accomplishing (or at least certifying) all tools (i.e., modeling and simulation, wargaming assumptions, etc.) for the purpose of ensuring deficiencies and potential solutions are properly developed at the DoD level?

Sometimes requirements are generated to justify the weapons system and not to resolve a mission deficiency.

For example, in one aircraft purchase, the number of aircraft to be produced was based on the the ground coverage of its radar. A later analysis pointed out that based on the given radar coverage, the number of aircraft bought could be reduced; however, instead of reducing the number of aircraft bought, the radar coverage requirement was reduced, resulting in the need for the original number of aircraft. That illustrates once again the need for the traceability of requirements to the mission deficiency, not the weapons system.

It is acknowledged by Pentagon bureaucrats that the military services' real battle is not the next war, but the next budget exercise. In order to cut inefficiencies and bogus requirements, connectivity of the requirement to measures of effectiveness—i.e., battle outcomes—must be shown. Major commands are not very effective at obtaining resources using strategy-to-task analysis, and this was also a draft finding of the Air Force Studies Board during its pre-milestone 1 (now Milestone B) review.

Why all these problems? A couple reasons come to mind. Firstly, modeling and simulation requires a certain level of assumption. Changes in those assumptions can make the difference between having or not having a need. Since the major commands are running the models, Congress may view it as the wolf guarding the hen house. Secondly, the Air Force hasn't had too many programs that resulted from MAA/MNA. Most have been top-down (i.e., Congress, the president, etc.) directed (outside the process) and generally based more on the availability of technology or the need to replace an aging system. The notion that major commands are out there annually running fully capable

and accepted Office of the Secretary of Defense-endorsed models is not widely accepted.

Traceability tools that take lower-level requirements and trace them back to the initial need are not being used.

This problem was noted elsewhere in this article, but it needs to be emphasized. Traceability tools provide a structured technique for identifying performance requirements and system concepts; providing uniform communication of requirements; providing baseline data for system design, logistics support, test activities, and training and operations; and defining source requirements for end-item specifications. The tools document the rationale and the process for requirements from the MAA to the operational requirements document (ORD, now call the initial capabilities document, or ICD). Currently, there is no technique that does that, resulting in a lack of traceability and confusion. Traceability tools should be mandated.

The requirements process takes too long.

Historically, by the time systems are fielded, 10 to 15 years have passed and the threat has changed. What causes this? Part of the problem is the process itself, which will be explained in a moment. Both the documentation requirements and budget process adds to this problem.

Contrary to popular belief, program stretchouts, which have for years been attributed to Congress, were shown through a report (Betti Streamlined Acquisition Initiative) to actually be the result of internal DoD realignments of funds. The process is DoD's to fix.

One of the problems that lead to extended timelines is a lack of upfront planning. Upfront planning, to include such things as assessing alternatives, accomplishing trade studies for performance versus cost, etc., is essential to get the most bang for the buck. Any student of acquisition or Lean engineering will tell you that there is a direct relationship between schedule (and cost) savings and early problem resolution. If this is the case, why then is the funding for the MSA phase so minuscule?

The old DoDI 5000.1 stated that the under secretary of defense for acquisition would provide funding for the phase 0 (now MSA phase) activity, yet in essence, the funding was so small as to be nonexistent. (The new DoDI 5000.01, dated May 12, 2003, no longer addresses this issue.) Funding for phase 0 activities had to be begged, borrowed, and stolen from other sources. That results in minimum alternatives being reviewed and/or trade studies that are not completely accomplished.

Obviously, the need for upfront planning is a tenet accepted by all. Unfortunately, either the means is undefined or the will is lacking. Initial project direction is absolutely crucial to effective and efficient acquisition of programs. The need for

phase 0 (now the MSA phase) funding must be planned and budgeted by the users without the worry of having the money cut for other purposes. As mentioned, the user currently has that responsibility but cannot use research and development funds—a real catch-22.

Major acquisition programs are characterized by long timelines. Unfortunately, these timelines are unnecessarily stretched out by the bureaucracy, e.g., the documentation coordination cycles of the ORD/ICD, COEA/AoA, acquisition program baseline, etc. Disconnects with any of those documents can cause major perturbations in the schedule.

The requirements documents are improperly accomplished.

There appears to be a mentality among all users to fill out the first ORD (now ICD) as completely as possible and as soon as possible. The ICD is the place for listing critical performance parameters; however, there is no need to have the initial ORD reflect everything quantitatively. The initial ICD, created prior to the material development decision (prior to the start of the MSA phase), has been inappropriately used to generate the system specification because of its detail (in some other programs, it is not even signed when the system specification is released to industry). This mentality drives program cost and reduces performance tradeoff opportunities. The Army's Training and Doctrine Command approach is to attempt to limit the ORD to one page. In contrast, AFI 10-6 has nine pages of just instructions on what should be in the ORD. The final ORD, indeed, needs to have that level of detail, but not the initial one. Instruction needs to be provided to the users on what is and is not acceptable in the initial ORD. Air Force Directorate of Operational Requirements concurs that initial ORDs are too detailed. Processes and examples of how to determine critical performance parameters should be included in the next AFPD 10-601 update. It is imperative that the developer have some room to trade off requirements in order to obtain the best mix of cost and performance. The key is that the user must trust the developer to provide the various options. Using the entire team to fill out the ORD is the right direction in solving this problem.

To create an ORD without the other team members results in two of the current problems we have with the system. First, it takes 47 weeks to get an ORD coordinated. That is too long. The reason is the users have to "inspect in" the quality of the draft versus ensuring the quality upfront using a team approach to development. Second, the other Service users (when there is more than one, such as for the GPS program) are frustrated at the requirements process because their requirements are either relegated to secondary status or are not addressed at all. That results in some users going directly to the acquisition community to be heard. Bypassing the "executive" user causes its own unique communications problems.

Finally, there is little written procedure for how to accomplish the documentation, to include the MAA, MNA, and COEA. It

was discovered that some documents are created not as part of the process but after the fact as backfill or “box-checks” for those that are missing. The CONOPs often fall into this category as well. When you put poorly trained personnel together with a lack of sufficient written guidance, the result most likely will be negative.

Communication must be open and honest.

Without a clear understanding of roles and a process for ensuring anomalies are processed according to an agreed-to methodology, confusion will continue to confound the participants in the process. One way of reducing the size of this problem is to put the rules of engagement in writing—e.g., employ a charter, signed off by all the participants.

Inhibitors to careful planning and teamwork are decisions by individuals without regard for analysis or trades. Other reasons for seemingly arbitrary decisions are the need to justify the expense of existing architectures, to include base operating support facilities. A structured and analytical approach to all requirements is required versus the arbitrary decision of an individual. Uninformed (and sometimes capricious) decisions could be curtailed if they have to meet the scrutiny of fiduciary prudence. One of the findings of earlier studies is that many decisions are made by fiat, in contradiction to the results of modeling.

Cost is driven up by the instability of requirements.

Requirements often change when people are reassigned and new philosophies are introduced. This problem indicates that requirements can be more personality dependent than scenario driven. A similar problem is requirements creep, which occurs when a new technology is being marketed either by a lab or by industry. They know if they can get the need for their system into the requirements document, it will ensure a business base for years to come.

The Navy is very proactive in ensuring that new requirements without associated funding are rejected. Instability and creeping requirements and the problems they cause are another good reason why decisions must be documented and arrived at by a given process, not the whims of individuals. Whims, like people, change. Change, without understanding, causes confusion and frustration as well as increased cost.

Training and experience are critical.

Without a firm understanding for the technical issues raised, experience in writing requirements, and a good knowledge of the budget process, military officials can get lost in the requirements process—and they frequently do! Most of the time, the individuals actually writing the requirements are junior officers. That results in requirements that tie very poorly to system utility. The problem is not only with the junior officers. Many senior officers are not aware of the impact of their requirement decisions on the process. To hold a critical position in the requirements process, an individual must be

Questions For Readers

- Do you feel people today understand the requirements process?
- The names of the processes have changed; have the results? Is there a system in place to develop requirements using some form of strategy-to-task analysis? Is it better?
- Do you believe the integrated product development is used effectively in DoD?
- Are document processing times still taking inordinate amounts of time?
- What changes have occurred to improve the acquisition knowledge of the end users?
- Are program management offices able to trace requirements back to credible source data (that drove the acquisition initially)?
- How effective is the process today in addressing cross-Service solutions?
- What percentage of new programs is the result of warfighting shortfalls versus being top-down directed?
- Where does one go now to see templates and find assistance with documentation?
- Are charters employed to establish roles and responsibilities?
- Are there minimum levels of competence required today to hold positions in requirements positions?
- Did the elimination of many acquisition professional positions in the early 2000s make the requirements process worse?
- What can be done to fix this process, and does it need to be fixed?

trained and a obtain level of individual competency. If pre-Milestone B activities are not going to be returned to the developing agencies, user personnel must become proficient in the acquisition field.

Three things must occur to ensure competency. First, a certain level of experience (time in position) in the requirements/acquisition process must be mandated. Secondly, the problems and processes associated with requirements and the problems associated with managing multi-user programs must be developed and provided. Finally, there should be a method to assess, both before and during tenure, an individuals ability to accomplish the tasks. This can be accomplished using either oral or written (e.g., tests) methods or through customer feedback metrics.

These were the problems that existed in 1993—has anything changed?

The author welcomes comments and questions and can be contacted at mikael.beno@gunter.af.mil.



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Evaluating Open Source Software

Matthew Kennedy



There is an overwhelming amount of open source software available today that can be used throughout the software development life cycle. Nowadays, it is generally not a matter of whether one should use OSS, but rather, where

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one should use it. If one were to start a new software development project, he would probably begin by looking for various types of software to aid in development, such as an integrated development environment, version control system, and a bug tracking tool, to name a few. If he looked exclusively for OSS, he could use Eclipse for the integrated development environment, Subversion for the version control system, and Bugzilla for the bug tracking tool. Those products are available for download and are open source. Looking outside the development environment, one's deployed system may require a database. A person could use a proprietary database such as Microsoft® Access, Microsoft Sql Server, Oracle®, or an open source option such as MySQL. When looking to fill a technological need, OSS may be a viable option.

In July 2008, the U.S. Air Force Office of Advanced Systems and Concepts funded Georgia Tech Research Institute to create and release an open source version of FalconView. Used by the Department of Defense since the 1990s, FalconView is a comprehensive mapping tool that supports various mapping formats and includes ample map analysis tools. With both government and private applications moving to open source development, the proper evaluation of OSS throughout the program is imperative to making informed decisions that could affect the life cycle of the project. What are some of the factors that must be considered when choosing whether to use OSS?

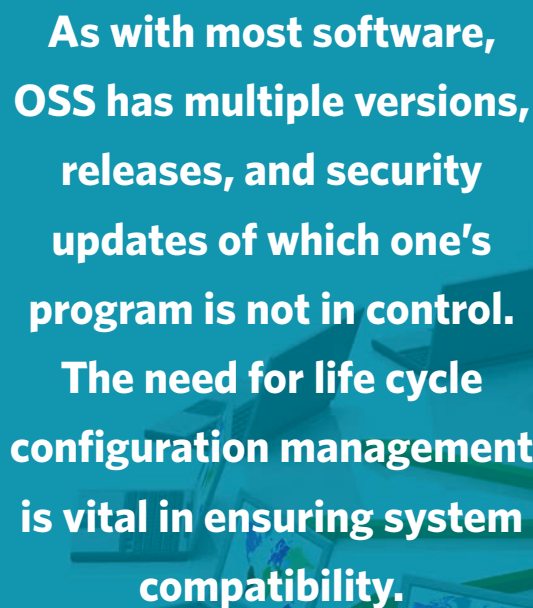
What is OSS?

According to a DoD chief information officer memorandum of 2009, "Clarifying Guidance Regarding Open Source Software (OSS)," OSS is "Software for which the human-readable source code is available for use, study, reuse, modification, enhancement, and redistribution by the users of that software."

That definition of OSS could apply to various terms used throughout federal and DoD guidance and directives. The Federal Acquisition Regulation/Defense Federal Acquisition Regulation Supplement defines commercial computer software as "Any item, other than real property, that is of a type customarily used by the general public or by non-governmental entities for purposes other than governmental purposes, and (i) Has been sold, leased, or licensed to the general public; or (ii) Has been offered for sale, lease, or license to the general public."

Chapter four of the Defense Acquisition Guidebook defines non-developmental software as "Any software that is not legacy software for the program, or is not developed as part of the effort being accomplished by the developer team. NDS includes COTS software, government furnished software, open source software, and software being reused from another program."

These definitions show that although OSS is not explicitly defined in DoD guidance and directives, the terms already in place clearly fit.



**As with most software,
OSS has multiple versions,
releases, and security
updates of which one's
program is not in control.
The need for life cycle
configuration management
is vital in ensuring system
compatibility.**

Some open source software projects are as big as, if not bigger than, their proprietary counterparts. According to its website, MySQL, an open source database application, has had more than 100 million copies of its software downloaded or distributed throughout its history and is currently on release 5.1.

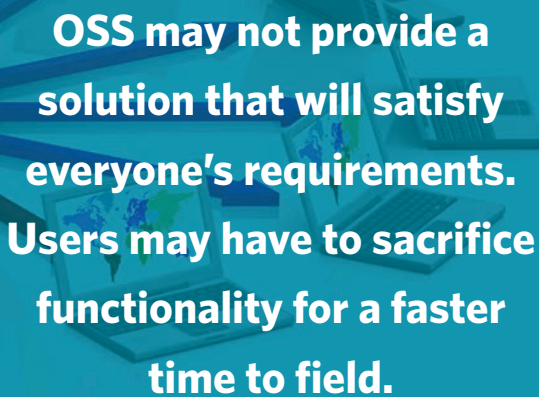
Open source software is generally thought to be free as in it has no costs. Though that is true in most cases, generally the term "free" is used in reference to the liberty of interested parties to freely distribute the source code. That is an important aspect to keep in mind when considering the use of OSS—there may be a cost.

Like proprietary software, OSS comes with licenses such as the GNU or Apache license. This article does not cover the licensing associated with OSS; however, it is important that the proper legal representative reviews the license prior to making the final decision. This assures that the manner in which interested parties intend to use the OSS is in accordance with the license.

Is OSS an Open System?

There is no direct correlation between an open system and OSS. Open source specifies that the human-readable source code of the application is available. In contrast, an open system, as defined by the Open Systems Joint Task Force, is specified as "A system that employs modular design, uses widely supported and consensus based standards for its key interfaces, and has been subjected to successful validation and verification tests to ensure the openness of its key interfaces. "

The question as to whether OSS meets the definition of an open system must be addressed per DoD Directive



OSS may not provide a solution that will satisfy everyone's requirements. Users may have to sacrifice functionality for a faster time to field.

5000.01: "A modular, open-systems approach shall be employed, where feasible." Because there are generally many contributors to open source projects, they tend to have a modular design; however, this is not always the case. Open Office has 450,000 members that have joined the project, so enforcing a modular design is paramount for continued success. Without a modular design, it would be extremely difficult to modify the source code of such a large application with so many contributors.

Another part of the open system definition is using consensus-based standards for key interfaces; this is also referred to as using open standards. Open standards play a critical role in our systems with modifiability, maintainability, and increased competition. Open standards have no direct correlation to OSS. Though most OSS projects use open standards, it is not required. Each OSS project must be assessed individually to determine if it is, indeed, an open system.

Are the Releases Controlled?

As with most software, OSS has multiple versions, releases, and security updates of which one's program is not in control. The need for life cycle configuration management is vital in ensuring system compatibility. A strategy needs to be developed to determine how one's program will handle periodic releases of the OSS software. Depending on the software, each release may require configuration, interface and installation, or system changes to remain compatible with the rest of the system.

What is the Maturity of the Open Source Community?

Similar to a standard commercial company, the maturity and size of the open source community can vary greatly. Open source projects can be started by a single developer who has made its source code available and gained additional support as the project grew, or by corporations who fund and assist in the development of the project. Open Office, an open source office suite, is sponsored by Sun® Microsystems and has other corporate contributors

such as Google® and IBM®. The Open Office project contains 30,000 source files and 9 million lines of primarily C++ code, according to the Open Office website, and it contains many of the features included in Microsoft Office.

Many factors affect the maturity of the open source community supporting the project. Navica® has developed an Open Source Maturity Model®, which is freely available and will assist in the assessment of the open source project. The Open Source Maturity Model provides a variety of templates to assess different areas of the open source project such as documentation, integration, product software, professional services, technical support, and training. Those items are then further decomposed to help assess each area of the open source project.

Do You Need to Modify the Source Code?

The major difference between proprietary software and OSS is the ability to view, modify, and distribute the application source code. Code modification may lead to some undesired effects on the life cycle of the system. Modifying the source code would force the program to keep a private copy that is different from the open source project's repository. That may work without issue for the initial release, but remember, just like proprietary software, OSS periodically releases new versions, patches, and upgrades. Once one breaks off from the primary project, he or she is now responsible for any upgrades and associated testing as the releases may not be compatible with the modified version.

Code modification may not be as easy as one might think. Take the Open Office project mentioned previously. If someone required a code modification and provided the development team with 9 million lines of code, a seemingly trivial modification may turn out to be a daunting task. Unfamiliarity with the application or programming language may cause additional complications. Most OSS uses a modular design so it can be easier to locate the code segment for which the modification is needed; however, the effects on the application may still be unknown.

One possibility is to make the modifications to the source code and submit the update to the OSS project's committee for review and possible incorporation within the next software release. If accepted, the update would go through the project's revision, testing, and review process during subsequent releases, and one would no longer need the old version of the software. Similar to most commercial software, the open source community does what is best for the community and not one's specific program. Therefore, there is no guarantee one's changes will be included in the next software baseline. As with any software application, when new functionality is added, the project is now responsible for maintenance, testing, and bug fixes for the added piece of functionality.

While modifications provide an added level of complexity, OSS does provide several alternatives over commercial software. One alternative may be deciding there is only a need to use a portion of the source code within the project. If the OSS is modular in design, it may be easy to extract only the functionality needed to incorporate into the application. That may be the best option if only a small piece of the OSS functionality is required. As with proprietary software, there is a point where “too much of a good thing” can turn bad. If one takes several pieces of different systems and includes them in his system, the system may become difficult to maintain, especially when each addition is in a different programming language, contains different interfaces, and may require additional dependencies. This can be exemplified by using a car analogy. Consider buying a Chevy Camaro but realizing that it will require the engine in the Ford Mustang and the electronics of the Audi A4. After integrating the required functionality of the other automobiles, the owner would have a system that met all of his requirements. However, if the vehicle needed maintenance, the owner would no longer be able to take it back to the Chevy dealership because a modification to the electronics system may adversely affect the engine because the components were not initially design to work together. In addition, if Audi releases an electronics upgrade, the owner may be unable to use the new software due to compatibility issues with the nonstandard engine.

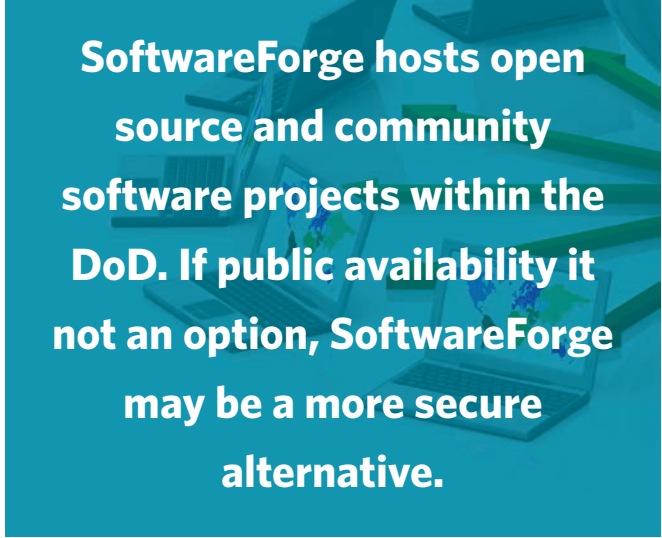
Is OSS the Full Solution?

As with most proprietary products, OSS may not provide a solution that will satisfy everyone’s requirements. Users may have to sacrifice functionality for a faster time to field. Gen. David Petraeus, commander of U.S. Central Command, recently said in an interview, “Never underestimate how important speed is.” Additionally, he pointed out that in most cases, the soldiers are willing to accept an 80 percent solution. This is where constant user involvement is imperative in order to help make an informed decision. The user decides if less functionality provided sooner outweighs the time needed to develop the functionality from the ground up.

Conversely, OSS comes with a variety of features and could include many more features than are required by one’s program. This inundation of extra features may require additional training, testing, and/or information assurance assessments to use the software in an operational environment. Removal of those features is also an option, but one must remember the risks mentioned in the modification section.

Does OSS Offer Maintenance and Support?

OSS may also contain a maintenance and support element that is available for a cost. MySQL offers an enterprise package that includes the software, support, and additional monitoring tools. Depending upon the needs of the program, one may consider a support package in which



the cost would need to be added into the life cycle cost of the system.

Overall Evaluation of OSS

If one chooses to modify the source code and keep his own version, OSS can easily morph into government off-the-shelf software, losing most of the value of leveraging from the OSS community. At that point, the program becomes responsible for having developers available for maintenance and support. One may also find himself maintaining a great deal more features than what is required for the program. Most OSS projects make the executable (installer) available for download. If one were to only download the executable, he will be left with what is essentially a proprietary product but with the added benefit of having access to the source code. Modifying the source code may be a researcher’s best option as long as he is prepared for the possible future consequences.

The items identified in this article are only a few of the considerations for evaluating OSS for use within a program. Other factors that may need consideration are security, prerequisites, reliability, and performance. The DAU Best Practices Clearinghouse (<<https://bpch.dau.mil>>) contains a forum to enable the sharing of best practices when evaluating OSS throughout DoD.

Remember, the open source community is available because projects make their source code available. Making someone’s code available may allow for external reviews and could improve code quality. The Defense Information Systems Agency has developed an online open source repository at <www.forge.mil> called SoftwareForge. SoftwareForge hosts open source and community software projects within the DoD. If public availability it not an option, SoftwareForge may be a more secure alternative.

The author welcomes comments and questions and can be contacted at matthew.kennedy@dau.mil.

From Now to Net-Centric

How an Army IT Organization Repositioned Itself to Support Changing Defense Priorities and Objectives

Gary M. Lichvar



Evolving national defense priorities and increased competition for defense technology funding is driving many military information technology organizations to restructure in order to eliminate redundancies, increase operational efficiencies and effectively meet customers' demands for rapid delivery of improved capabilities.

A case in point is the Army's Software Engineering Center at Fort Lee (SEC-Lee), Va., which has successfully reinvented itself

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as one of the Army's key sustainment and system management facilities. SEC-Lee stands as a good example of an IT organization that has leveraged its expertise, manpower, and capabilities in new and effective ways.

Formerly a primary provider of tactical software development and support for the Army, SEC-Lee has just assumed responsibility for ongoing sustainment and management of all the Army's retail-level logistics and maintenance systems—collectively known as the Standard Army Management Information System—which process transactions valued at over \$68 billion annually. In essence, all the ammunition, equipment, parts, maintenance, and supplies that the Army needs to function in both peace and war are requisitioned, processed, and tracked by STAMIS.

SEC director, Ned Keeler, noted that the SEC-Lee restructuring exemplifies transformation occurring throughout his organization as well as many other military IT organizations. "We cannot remain static and expect to keep pace with technological advancements and changing defense priorities," Keeler said. "Through new partnerships with industry and academia, improved business practices, and the reorganization and consolidation of programs and resources to improve effectiveness, all Army IT organizations seek to maximize their efficiency and contributions to mission objectives," he added.

[Note: Mention of industry organizations in this article does not constitute endorsement by the U.S. Army or Department of Defense.]

Necessity is the Mother of Reinvention

The increased focus on sustainment activities at SEC-Lee came about because SEC leadership recognized the opportunity to achieve greater efficiencies for contracting efforts, testing facilities, information assurance, and customer support by consolidating responsibility for all the STAMIS systems under SEC-Lee. This coincides with a general reallocation of IT resources to align with changing operational priorities (such as less emphasis on Future Combat Systems, the pending drawdown in Iraq, increased civil affairs and reconstruction activities, etc.).



With the expertise and resources at its disposal, SEC-Lee is also well positioned to expand its portfolio of sustainment and support programs as program executive offices transition other systems that have achieved full operational capability. "The key to success is to identify programs and organizations with complementary or overlapping knowledge, skillsets, or facilities and accurately calculate the potential costs of restructuring versus the benefits of the shared resources," says Ricky Daniels, director of the Tactical Logistics Directorate at SEC-Lee.

Plans are already under way to transfer management of the Software Integration Lab located at Fort Hood, Texas, and the Systems Integration Facility at Chester, Va., to SEC-Lee, and expand their operations in conjunction with the Federated Labs operations also based at Fort Lee.

Avoiding Capability Gaps

While the actual transition of responsibility for STAMIS from the Program Manager-Logistics Information Systems is now complete, SEC-Lee must continue to successfully execute the support and sustainment mission for these logistics systems.

As historical examples have frequently shown, an effective supply chain can determine the success or failure of military operations. Current combat operations in Iraq and Afghanistan, along with numerous peacekeeping and humanitarian missions, require the Army's logistics

and maintenance systems to support extended missions in some of the most remote and austere locations on the globe.

This means soldiers and commanders continue to rely on optimal performance of the existing systems, while also requesting new and improved capabilities to support their missions.

SEC-Lee, however, also faces an added complication. They must simultaneously try to ensure new functionality and technology insertions will not lead to a problematic capability gap between any of their STAMIS systems and the new Global Combat Support System-Army that is currently in development and scheduled to replace STAMIS beginning in 2012. The two systems will then need to co-exist for up to four more years as GCSS-Army is gradually fielded Army-wide.

SEC-Lee leaders' solution is to ensure careful coordination between their organization and GCSS-Army's other key stakeholders: the Program Executive Office-Enterprise Information Systems; Headquarters, Department of the Army, G4; the Army Materiel Command; and the Combined Arms Support Command. Aside from regularly scheduled briefings and updates with key personnel at those organizations, final system requirements issued to SEC-Lee by each STAMIS system's Configuration Control Board are automatically forwarded to GCSS-Army for their reference. In addition, by aligning their technology insertions as closely as possible with GCSS-Army's enterprise architecture framework, the STAMIS systems can more closely match their functionality with the GCSS-Army capabilities, ensuring the transition is as seamless as possible for end-users, with no mission failure or data interruption.

Integrating Commercial Solutions into Existing Systems

With buzz words such as "interoperability," "network-centric," and "enterprise architecture" permeating the Department of Defense's IT mantra for the past decade, any system classified as stovepiped or standalone was liable to be declared obsolete. In many cases, however, existing stovepiped systems are still fulfilling critical mission needs very well and can be effectively updated more quickly and at a lower cost than a complete redesign, while DoD continues to move toward its enterprise goal.

Using technology insertions, SEC-Lee is able to continue updating the various STAMIS systems with a combination of customized development and commercial off-the-shelf products. Taking advantage of several Microsoft®, Oracle®, and Sun Microsystems® operating systems, servers, and database products has reduced the lines of customized code that must be written and facilitated integration of other beneficial commercial products. That

has shortened SEC-Lee's development cycles, and it also brings a level of standardization to the systems that is helping streamline customer support and subsequent upgrades.

Using commercial products and interfaces familiar to end-users helps lower post-fielding training and support requirements when compared to the DOS-based legacy systems. In addition, several of the systems now feature comprehensive, integrated tutorials and computer-based training that give users a self-help option that can supplement or even replace formal training and minimize help desk tickets.

An exponential increase in cyber attacks and attempted intrusions into government systems (up from 6 million in 2006 to more than 300 million in 2008, according to DoD and industry figures) has triggered a corresponding barrage of federal, DoD, and Service-specific cyber security regulations. The time and cost of compliance with these requirements, however, can be significant, particularly where the security measures must be custom designed and painstakingly integrated and managed.

Because the STAMIS systems send more than a billion requisitions annually over unclassified networks, information assurance was a serious concern for the Army. Rather than build data and network security measures for the systems from scratch, SEC-Lee takes advantage of commercial products that are already in compliance with the regulations and standards.

For example, a technology insertion provided significantly greater data security in all the Microsoft® Windows-based STAMIS systems using a readily available commercial product. By integrating secure information exchange products from GlobalSCAPE Inc. of San Antonio, Texas, into both the client and server components of the systems, STAMIS developers ensure the security of all transferred data with significantly less development time and effort.

"Our widely used file transfer products provide the Army with a turnkey solution for their secure data communication needs," said Jim Morris, president and chief executive officer of GlobalSCAPE. "These products utilize industry standard secure protocols and are seamlessly integrated with other STAMIS systems," Morris continued.

The GlobalSCAPE products have also earned federal information processing standards certification and a certificate of networthiness from the Army's Network Enterprise Technology Command, ensuring the systems are in full compliance with federal and Army regulations and standards.

A Total System Engineering Approach

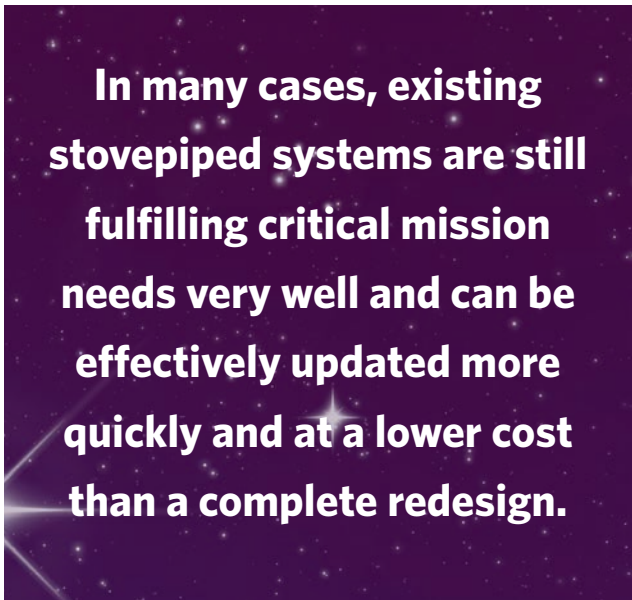
A major reason Army leadership felt SEC-Lee was ideally suited to assume sustainment and support responsibility for the STAMIS logistics and maintenance systems was their personnel's combination of technical expertise and functional logistical knowledge. STAMIS is a very complex family of systems, and the consequences of a failure in any of the supply or maintenance modules could be highly disruptive for Army operations.

SEC-Lee oversees five STAMIS supply and maintenance systems: the Property Book Unit Supply-Enhanced, the Standard Army Maintenance System-Enhanced, the Unit-Level Logistics System-Aviation (Enhanced), the Standard Army Ammunition System-Modernization,

and the Standard Army Retail Supply System. Several of the systems are composed of multiple sub-systems. They share data and resources with each other in varying degrees, must interface with a number of outside systems, and also have the flexibility to function effectively in differing levels and types of connectivity. There are currently over 40,000 STAMIS systems in use by more than 120,000 combat service support soldiers worldwide.

One of the major causes of delays, cost overruns, and poor outcomes when designing or updating large-scale systems such as STAMIS is poor management of system complexity. Integrated systems with networked components coexist with various subsystems and present significant challenges to both design and process management. Too often, programs fail because teams cannot clearly delineate functional requirements and show how interdependent components or subsystems affect each other in context of the overall system. One problem is fixed, only to "break" another component elsewhere in the system.

SEC-Lee takes a multifaceted approach to managing the complexity inherent in the ongoing update process



In many cases, existing stovepiped systems are still fulfilling critical mission needs very well and can be effectively updated more quickly and at a lower cost than a complete redesign.

Establishing clear lines of communication and carefully managing relationships with contracted developers and integrators produces measurable results.

Successfully Managing Contractor Relationships

Establishing clear lines of communication and carefully managing relationships with contracted developers and integrators produces measurable results, as evidenced by the major Standard Army Maintenance System-Enhanced (SAMS-E) modernization project that was fielded on schedule and under budget, with a 99 percent pass rate on critical tasks during government user acceptance testing.

McLane Advanced Technologies of Temple, Texas, was the lead systems integrator for the SAMS-E modernization project and continues to provide ongoing development and support services. This project merged and updated three legacy maintenance systems to include a Windows operating system, graphical user interface, real-time automation of key functions, and an array of new and improved features that improve efficiency and leadership oversight of various maintenance activities.

Effective two-way communication built high levels of trust between government personnel and McLane's developers when working on the SAMS-E project. That enabled both sides to go beyond contractually specified requirements and quality assurance measures.

"The Army gave us full access to the legacy systems, which allowed our analysts to develop requirements based on current functionality and avoid capability gaps," said Cathy Blurton, director of military development services at McLane. "In turn, our developers provided the Army's materiel developer and combat developer with live demonstrations of SAMS-E during the development life cycle so they had the ability to review it and address any issues early," Blurton added.

The SAMS-E team remains focused on quality assurance and are now preparing to conduct onsite training and a proof-of-principle assessment for U.S. Army installations in Europe, in order to optimize the configuration parameters to best meet their specific structure and needs.

Doing Better with Less

SEC-Lee's transformation into a successful sustainment and support organization is achieving greater efficiencies while delivering force multipliers to soldiers around the world. At a time when almost all DoD organizations are being asked to do more with less, these examples of cost reduction, increased efficiency, and improved performance are best practices from which many other IT organizations can learn.

The author welcomes comments and questions and can be contacted at contact_us@sec.army.mil. Please use Defense AT&L in the subject line.

for STAMIS. The fact that many of the SEC-Lee personnel who support the STAMIS systems are former logistics or maintenance specialists with hands-on experience lends them an added ability to effectively and accurately define and interpret the requirements, and then use the right technology to implement the requested capabilities. That helps avoid the unfortunate "Chinese whisper" effect that can result when there is a breakdown of understanding or communication somewhere in the process.

SEC-Lee System Manager for Property Book Unit Supply-Enhanced Pablo Brown believes one of their most important strategies is to ensure design requirements are well articulated and have clear relevance to the stated operational objectives. "We work collaboratively with the combat developers and configuration control boards as early as possible in the process of each update cycle to ensure that functional objectives are clearly supported by the technical solutions we ultimately employ," Brown stated. "It is equally important that all requirements are worded unambiguously before we even pass them on to the developers."

Seemingly simple revisions to a requirement's verbiage can make all the difference in ensuring its full intent is ultimately met and soldiers get the capabilities they need on time. Waiting until the validation and testing stages to assess whether the technology serves the functional objectives would not leave adequate time or funding for anything other than minor course corrections. In the worst-case scenario, a problem at this point could cause major delays and cost overruns as developers and project managers go back to the drawing board.

Instead, SEC-Lee applies a variety of process improvement and quality assurance tools throughout the course of a project to verify progress and help assure successful outcomes. These tools range from Capability Maturity Model Integration assessments and proof-of-principle analysis, to back-to-basics techniques such as code spot checks.



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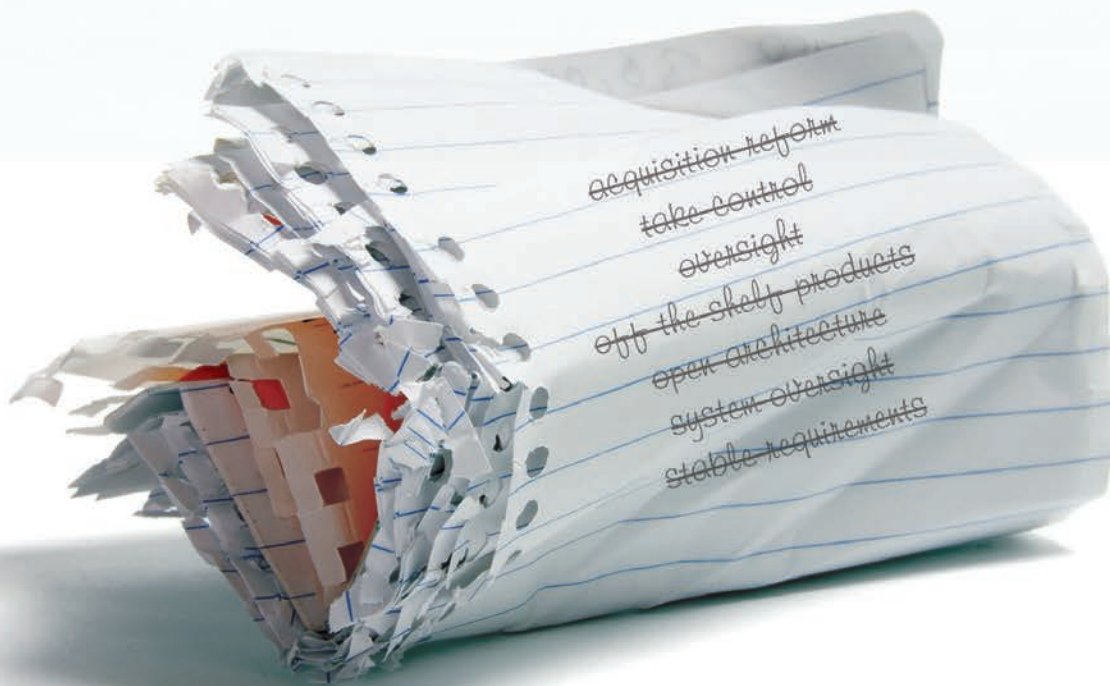
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Lessons Learned from the Coast Guard's Acquisition Reform

Capt. Joe Vojvodich, USCG



The Coast Guard has discovered that success with complex systems acquisition is possible. On July 13, 2007, the U.S. Coast Guard took an important step on its acquisition reform journey when it reached initial operating capability of its reorganized Acquisition Directorate, effectively merging the legacy acquisition organization and the Deepwater Program Executive Office, which oversees the Coast Guard's 25-year plan to replace or refurbish all its equipment. The voyage has been challenging but rewarding, as the Coast Guard has uncovered a number of lessons learned that essentially reinforced proven acquisition best practices and put the Coast Guard appropriately in control while assuming the role as the lead systems integrator for major systems acquisition.

Coast Guard major system acquisition is more important than ever, as its annual appropriation for acquisition, construction, and improvement—funding that is specifically designated for major capital improvements such as the acquisition and rehabilitation of vessels and aircrafts—has tripled over the last decade. Delivering capabilities through goods and services is the fundamental tenant of the Coast Guard's acquisition arm. Without new and refurbished boats, cutters, planes, helicopters, and command and control systems to enable the rescue of distressed boaters, enforcement of laws and regulations, and prosecution of homeland security threats, front line operators would be unable to complete the Coast Guard's mission. However, making mission execution more effective and efficient requires highly integrated, interoperable systems that can be expensive and often push the technological envelope.

A Blueprint for Acquisition Reform

The Coast Guard, like many other federal agencies, has faced intense scrutiny in the recent past for its efforts to execute and manage acquisition programs, particularly large, complex ones. The Coast Guard Deepwater program has been the subject of a number of Government Accountability Office reports, Department Office of Inspector General inspections, and congressional inquiries on its use of its system of systems acquisition strategy. Recognizing the weaknesses and responding to its overseers, the Coast Guard announced its Blueprint for Acquisition Reform in 2007, carefully outlining improved acquisition processes and aligning itself with the Service's modernization of mission support elements. Version four, now called the Blueprint for Continuous Improvement (July 2009), can be found at www.uscg.mil/acquisition/aboutus/blueprintv4.pdf.

The Coast Guard has achieved remarkable results since it asserted leadership in realigning its acquisition organization and its procedures. Among many notable accomplishments since enacting its own acquisition reform, the Service accepted the first mission systems pallet for its HC-144A "Ocean Sentry" Maritime Patrol Aircraft, a roll-on, roll-off

suite of electronic equipment that integrates multiple sensors and exchanges both classified and unclassified information with other assets. The Sentinel Class Fast Response Cutter project, removed from the Integrated Coast Guard Systems [*the private sector lead systems integrator for the Deepwater Program*] contract in 2007, was awarded in September 2008 with a full and open competition. On May 8, 2009, the Coast Guard celebrated the final acceptance of the 418-foot National Security Cutter *Bertholf*, the first of the eight Legend-class ships, and the ship received its authority to operate classified systems later that month. The second National Security Cutter, *Waesche*, completed preliminary acceptance in November 2009.

The Coast Guard significantly improved its ability to acquire in an integrated fashion.

Taking Control

The Blueprint for Acquisition Reform was a call for the Coast Guard to take control. The restructuring provided greater clarity in Coast Guard roles for project execution and support. With better role definition, Coast Guard's acquisition personnel were better able to execute their oversight role and to stringently monitor system development and deployment activities. The Coast Guard learned that oversight required full engagement and insight into the developers' processes, decision making, and quality control and assurance.

To provide a clearer characterization of its recapitalization efforts, the Coast Guard disaggregated its Deepwater system of systems acquisition into a number of smaller traditional projects based on single asset classes such a cutter or an aircraft. The National Security Cutter and Maritime Patrol Aircraft are examples of asset projects that were spun off from the complex system of systems program. Single-asset project managers were chartered with cost-schedule-performance responsibilities, adding clarity and authority to a better-defined portfolio of acquisition initiatives.

To preserve the premise of acquiring capability through a systems perspective, the Coast Guard balanced the single asset projects with a new program office structure that had full purview of the acquisition of command, control, communications, computer, intelligence, surveillance, and reconnaissance systems. The C4ISR program focused on capabilities that are typically multifaceted and designed to be interoperable, integrated, and networked. The C4ISR program not only included existing projects such as Rescue 21 [*a program involving the upgrade of the Coast Guard's communications into a system that uses digital communications and voice over Internet Protocol*] and the Nationwide Automatic Iden-

Vojvodich is the C4ISR acquisition program manager in the U. S. Coast Guard Acquisition Directorate. He is a Level III certified program manager.

tification System [a system that will allow the Coast Guard to identify, track, and communicate with marine vessels using a new maritime digital communication system], but also the C4ISR systems acquired on aviation and afloat assets. The C4ISR program required all project sponsors and C4ISR technical authorities to acquire systems that were capable and sustainable within the service's enterprise architecture while complying with technical standards and policies.

The Coast Guard significantly improved its ability to acquire in an integrated fashion with rigorous, coordinated participation from its technical authorities and sponsors. Integration was achieved by each element of the acquisition enterprise executing its inherent responsibilities and competencies: the sponsor to clearly understand and articulate the need; the technical authority to express the standards, policies, and architectures for the solution; and the acquisition program manager to acquire within established cost-schedule-performance parameters. The collaborative team effort has produced considerable success.

The Service took more control in acquiring future integrated systems by improving system definitions and increasing the use of architectures. Where it made sense financially and functionally, it obtained the legal rights, design documents, source code, and interface descriptions in order to reduce dependence on single vendors, increase innovation, enhance future competition, and drive down life cycle costs. Through a well-defined architecture and comprehensive interface descriptions, the Coast Guard advanced its core competencies of systems engineering and systems integration and put itself in a better position to manage the acquisition.

Importance of Oversight

Some have questioned the Service's ability to exercise proper oversight of industry activities. In the past, while it employed readily accepted best practices and government standards for overseeing contractors, the Coast Guard still found itself a step behind in managing a dynamic systems acquisition. Since enacting acquisition reform, the Coast Guard has emphasized the use of recognized techniques and practices such as earned value management, technical interchange meetings, and formal progress and program reviews—all which have yielded very positive results. The Service has also worked to ensure that the contractors deliver the right information at the right time in order to reveal any potential shortcomings as early as possible and verify that the products will satisfy operational requirements, achieve technical standards, and realize cost-effective sustainment.

Perhaps the most important aspect of oversight and control is insight of the system development activities. It is important to ensure meaningful documents, coupled with program and engineering reviews, provide necessary information that will reveal the true status of the acquisition.

Through deliverables and reviews, the Coast Guard can gain an early glimpse of the health of the development effort. Rigorous testing as the asset or capability is finally delivered is important, but it is often too late to discover serious flaws. The assessment of system development artifacts and the physical presence at the developer's facilities provided the Coast Guard the necessary insight of the developer's quality control and decision processes that eventually impact the final solution. Only through insight does the program manager realize real oversight.

Lessons for Moving Forward

Stable Requirements

As the lead systems integrator, the Coast Guard has fully realized the importance of imposing stable, government-derived requirements on the developer and then exercising oversight over the development effort. While performance-based contracting remains a viable acquisition approach, the Coast Guard has been determining more specifications



The Coast Guard has achieved remarkable results since it realigned its acquisition organization and its procedures.

before entering into a contractual relationship, especially for complex systems. The contract should not only dictate the products and outcomes of the deliverables but should also require written developmental documentation and program reviews to provide timely information that is also necessary to ascertain the quality of services and products as early as possible. Program management activities such as design reviews, technical evaluations, and testing must occur early and periodically in an acquisition. Performance assessments near or at the end of the development or integration effort are a primary reason for cost growth and schedule delays.

Oversight Role

The oversight role is manpower intensive but necessary to carry out inherently governmental functions. An inadequate staff in numbers, experience, and qualifications caused problems early in the Deepwater acquisition, but the Coast Guard has made considerable progress in improving the situation. The Department of Defense encountered a similar situation, as its budget for goods and services nearly doubled in recent years. Secretary of Defense Robert Gates announced in April 2009 plans to hire 20,000 acquisition professionals by 2015. While Coast Guard acquisition is certainly not as large as DoD acquisition, it also will realize a significant boost with expected additional billets in fiscal year 2010. The Coast Guard has also successfully implemented a certification program that expanded its acquisition training opportunities and credentialing process to prepare technical staffs, project managers, and contracting specialists to oversee complex acquisition.

Off-the-Shelf Products

The Coast Guard has learned that the use of the commercial off-the-shelf and government off-the-shelf products, while effective and capable, is no panacea, especially for larger projects that require integration. No longer deploying capability in a standalone manner, the system integration effort in and of itself is a challenge and demands the rigor of sound systems engineering, including well-understood requirements that can be tested and verified. With constantly evolving cyber threats and interoperability concerns, integrating commercial off-the-shelf and government off-the-shelf components to adhere to information assurance certification and accreditation mandates has become increasingly complex and costly. The challenge of technology obsolescence and diminishing manufacturing sources must also be closely considered and planned for early on, as new functionality is introduced at regular intervals. With observed obsolescence periods of one to two years for many software components and a typical five-year period for many pieces of hardware, the Coast Guard is learning to anticipate degradation as it assembles plans to build evolutionary systems that consider changing interoperability requirements, address new cyber threats, and account for obsolescence.

Open Architecture

The Coast Guard is realizing the power of using open architectures to facilitate its role as the lead systems integrator. A primary goal of using an OA approach for developing integrated systems is the prospect that multiple private sector entities will participate in the acquisition, therefore enabling competition, innovation, and lower costs. When a single vendor manages the entire architecture and acquisition life cycle, the government can grow reliant on one industry entity to produce and support all of the capability, allowing the sole provider to design the architecture to employ its marketed products. The Coast Guard is aiming to take advantages of OA and use common software modules, employ multiple vendors, and invoke innovation. Inserting OA into the Coast Guard ethos will be challenging but necessary to deliver affordable systems in future.

A Systems Outlook

The Coast Guard has retained a systems outlook by employing program managers who have purview over a portfolio of related projects within their domains, specifically surface (cutters and boats), aviation (fixed and rotary wing), and C4ISR. Inherent in the C4ISR program is the opportunity to maintain a systems perspective by considering the enterprise and imposing common technology across the surface, air, and shore platforms, no longer allowing C4ISR products to be acquired in a stovepipe, unconnected manner. For example, the C4ISR systems developed for the National Security Cutter and the future Offshore Patrol Cutter will be overseen by the same C4ISR acquisition program manager, who will look to acquire common systems and sub-systems across the assets, thus simplifying maintenance and lowering life cycle costs. Moreover, the National Security Cutter, Maritime Patrol Aircraft, and the C-130J "Hercules" Long Range Surveillance Aircraft already have common products and use common software modules across.


In October 2008, the Acquisition Directorate achieved final operating capability when all of its program managers were physically collocated in the same building. Having all of the program manager proximate to one another generated synergies that encouraged common processes and eliminated redundant activities. As the Coast Guard refines its processes; hones the lead systems integrator relationships among the acquisition program managers, technical authority, and sponsor; and grows its workforce competencies and capacities, it must build upon the lessons learned during its acquisition reform. The Service must strive for insight of its acquisition efforts, as insight is the enabler for proper oversight and control in order to achieve success with complex acquisition programs.

The author welcomes comments and questions and can be contacted at joseph.m.vojvodich@uscg.mil.

Recruiting as One Global Corporation

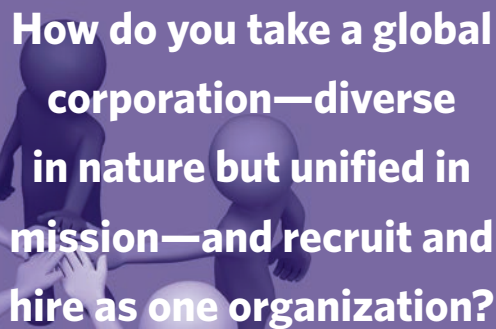
Matthew Tropicano





How do you take a global corporation—diverse in nature but unified in mission—and recruit and hire as one organization? Can a 19,000-person organization apply the motto *e pluribus unum* (out of many, one) to their recruitment and hiring efforts, and if so, how? How do you know when you are successful? What are your metrics?

Tropiano is the corporate recruiter for the Naval Facilities Engineering Command. He entered government service in 2001 as a Presidential Management Fellow. His background includes degrees in electrical engineering, business, and religious studies.



How do you take a global corporation—diverse in nature but unified in mission—and recruit and hire as one organization?

Naval Facilities Engineering Command is a global corporation whose mission is to strengthen Navy and Marine Corps combat readiness worldwide through facilities life cycle support focused on the fleet, fighter, and family. For the joint warfighter and all supported commanders, NAVFAC's vision is to deliver mission capability whenever and wherever required. With locations in Michigan; Washington; California; Virginia; Washington, D.C.; Hawaii; Florida; Guam; Japan; Djibouti; Bahrain; Egypt; Greece; and Italy, NAVFAC is truly a global corporation. Its recruiting and hiring tactics can be emulated by other defense organizations and Services.

Moving Toward a Battle for Jobs

According to the Department of Labor, the unemployment rate in January 2010 was at 7.6 percent and has consistently climbed to where it was at the time this article was written, at a staggering 9.4 percent. Economists are predicting that the unemployment rate will hit 10 percent. Department of Labor statistics also show the skyrocketing ratio of unemployed persons to jobs available.

In addition, for several years, the clarion cry around Washington, D.C., has been about looming retirements and the need to springboard into action on succession planning to fill those gaps. Certainly, statistical employment demographics still show an aging workforce, but the current economic climate has seen a movement from a battle for talent to fill those imminent retirements to a battle for jobs. Recent corporate job fairs in Detroit, Mich., and Washington, D.C., were attended by thousands of qualified professionals seeking employment. Additionally, with finances reduced due to the downturn in the market, many employees are not retiring when they are eligible. At NAVFAC alone, retiring employees this year were waiting more than 50 percent longer after their eligibility date than in previous years.

Those who work at NAVFAC and other government agencies find fulfillment in their public service jobs. A 2008 Merit Systems Protection Board survey revealed that 84 percent of those surveyed (more than 1,800) want the ability to make a difference, 97 percent want job security, and 45 percent of new hires under 30 plan to stay with the government

until they retire. Also, a 2008 Partnership for Public Service survey in which 32,000 non-federal employees were queried, public service ended up being one of the most popular choices for undergraduates. Finally, with an average age of 49 for current NAVFAC employees, new employees at NAVFAC have a tremendous opportunity for growth and development and can go on a possible fast track toward increased responsibility and work. Hence, current surveys reveal that NAVFAC provides what people are looking for in an employer. NAVFAC has the opportunity now to recruit and hire the best to serve those who are serving our country.

The Corporate Recruiting Partnership Team

The Corporate Recruiting Partnership team oversees NAVFAC's recruitment and hiring efforts. The partnership is made up of the lead recruiters from each of NAVFAC's organizations. Its charter is to integrate the recruiting and hiring process and to bring together the recruiting leads of NAVFAC to share best practices and resources, minimize duplication, and maximize recruiting and hiring efforts. The Corporate Recruiting Partnership enables NAVFAC to recruit as one corporation while retaining diversity of opportunities and localized distinctions.

The Strategy—Data-Driven Recruitment

In an article in *Fortune Magazine* (June 1999) titled "Why CEOs Fail," business consultant Ram Charan stated that in 70 percent of cases, disappointing company performance stemmed from faulty execution, not flawed strategy. It was hardly from lack of smarts or vision. Thomas Edison asserted that "Vision without execution is hallucination." Execution is the key. Unless the strategy is well executed, all the strategic planning is for naught.

NAVFAC's goal will be to meet its current and future demand signal and lower the current vacancy rate while simultaneously increasing its corporate diversity. NAVFAC's present and future vacancies and their locations coupled with succession planning analysis will let the Corporate Recruiting Partnership know where the demand for new hires resides. By using accurate vacancy data, the Corporate Recruiting Partnership team will set NAVFAC's course toward ensuring effective recruitment practices.

The Recruiting Corporate Partnership members cannot attend every job fair or every college or recruitment initiative. NAVFAC's recruitment leaders are not social workers, career counselors, or online match-matching services trying to make a match with every person they meet. The National Association of Colleges and Employers in a recent e-mail stated that the best job referral programs work when employees refer not the people they know best, but rather, refer the best people—the best civil engineers, the best urban planners, and the best electricians. Hence, the Corporate Recruiting Partnership members will go only to particular events, associations, and institutions that impact NAVFAC's demand signal or NAVFAC's diversity needs.

The current and future vacancy data must drive the partnership's choices as to where they target their recruiting efforts, and the data must be updated regularly. The expected outcome is that NAVFAC will become appropriately staffed with people of amazing excellence and a level of diversity that matches NAVFAC's needs.

That is Phase One of NAVFAC's recruiting plan. Phase Two will apply succession planning principles that will enhance Phase One's recruiting efforts. Effective succession planning will allow NAVFAC's current and potential employees to see the opportunity and road ahead of them and are able to drive diligently and purposefully towards it. More specifically, Phase Two will require that NAVFAC look two, five, and 10 years into the future to determine what its future mission needs will be and what skills will be needed to accomplish that mission. In addition, using the retirement data available now and in the future, NAVFAC can extrapolate and determine the vacancies in two, five, and 10 years. Phase Two builds upon Phase One and adds depth to NAVFAC. While Phase One provides the vision as to how NAVFAC will accomplish its current mission, Phase Two provides the insight as to how NAVFAC will accomplish its mission in the future.

The Scoreboard

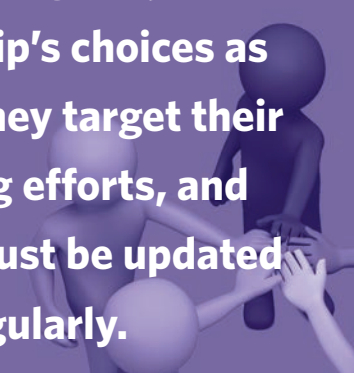
The proposed metrics for the Corporate Recruiting Partnership will be the number of vacancies filled as well as the number of interviews, acceptances, and declinations. That must be the primary measure of success. People like to know how what they are doing affects the bottom line. When that happens, they are more focused, determined, and energized.

The partnership will have three purpose-driven meetings a year—a preview meeting, a renew meeting, and a review meeting. The preview meeting will be held prior to the start of the fiscal year. The preview meeting will answer the question: where and how will the NAVFAC Corporate Recruiting Partnership recruit based on NAVFAC's current and future demand signal? In addition, leads will be identified for national, regional, and local initiatives (events, associations, colleges, institutions) and a standardization of approach and procedure and metrics will be agreed upon. At the mid-year renew meeting, the partnership will look at how it is doing in light of the plan launched at the preview meeting. Do adjustments and changes need to be made in the partnership's approach, procedures, or pursuits? Finally, in the renew meeting held at the end of the year, the partnership will examine how it did, closely reviewing its metrics and vacancy rate.

Outcome of Inaugural Preview Meeting

In August 2009, the Corporate Recruiting Partnership had its first inaugural preview meeting to discuss and decide where and how NAVFAC was going to recruit and hire as one corporation. A draft of the strategic recruiting concept and its execution was presented (it is currently being updated for fiscal year 2011) as well as best practices for reaching out

The current and future vacancy data must drive the Recruiting Corporate Partnership's choices as to where they target their recruiting efforts, and the data must be updated regularly.



to Transition Assistance Program classes for those retiring from the military.

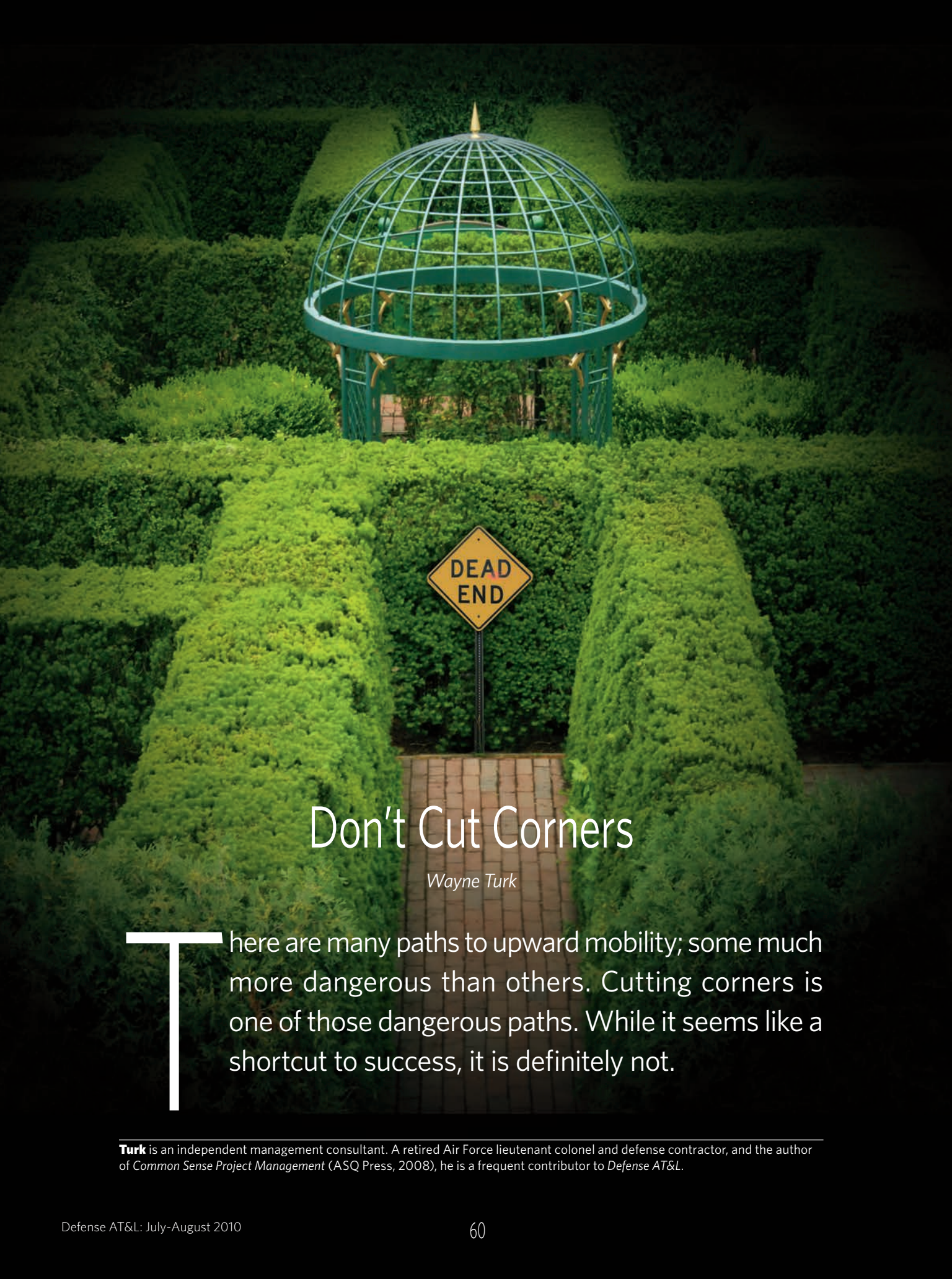
The Corporate Recruiting Partnership identified a draft of planned events and tasks to be accomplished to meet the current demand signal through recruiting and hiring. At the meeting, the Corporate Recruiting Partnership proposed a standardized, collaborative, and corporate approach to recruitment events. The events will be based on NAVFAC's demand signal (in process), diversity needs, and business leadership input.

The current proposed major fiscal year 2010 products from this collaborative effort are as follows:

- An integrated, standardized and collaborative approach to several national, regional, and local recruiting events
- Establishment of a resume tool to share, track, and find the best candidates for the NAVFAC corporation
- Coordination, attendance, and participation at events specific to NAVFAC's demand signal based on vacancy, diversity, and mission criteria
- Unified and corporate approach to recruiting and hiring retiring officers and sailors who meet NAVFAC's demand signal
- A corporate vacancy list to equip the Corporate Recruiting Partnership for recruiting and hiring activities at events, institutions, and associations.

NAVFAC is a global corporation with positions and missions worldwide, and it is on the crest of a strong tide. With an updated and accurate demand signal and data-driven execution, NAVFAC will take the direction that best serves the U.S. Navy as it recruits and staffs itself with outstanding people who can provide the best service.

The author welcomes comments and questions and can be contacted at matthew.tropiano@navy.mil.



Don't Cut Corners

Wayne Turk

There are many paths to upward mobility; some much more dangerous than others. Cutting corners is one of those dangerous paths. While it seems like a shortcut to success, it is definitely not.

Turk is an independent management consultant. A retired Air Force lieutenant colonel and defense contractor, and the author of *Common Sense Project Management* (ASQ Press, 2008), he is a frequent contributor to *Defense AT&L*.

Cutting corners can involve any number of actions. It could mean ignoring policies, regulations, or laws. It might involve shortcutting the processes that are in place. It might be the purchase of less-expensive equipment that may or may not meet your needs in the long term. It could mean cutting quality. It might mean ignoring or taking significant risks. It could involve lying or covering up problems. It might mean failing to practice good management techniques and relying on fear to get the job done. Cutting corners is doing less than your best to achieve some end goal. None of these actions (or inaction in some cases) are a good idea.

Some of the Dangers

Common sense should usually alert you to the dangers or consequences of cutting corners, but sometimes we need reminders. Here are a few of the ways you may be tempted to cut corners, as well as the consequences, but keep in mind that this list doesn't cover every situation.

Ignoring or Breaking Policies, Regulations, or Laws

This is one path that will inevitably get you in trouble. Think about Enron. My guess is that the managers there started cutting corners to make their "numbers" and please investors. They took small actions. They didn't plan to go as far as they did, but once they started on that slippery slope, every cut corner led to another until, pretty soon, they had to keep creating false reports or they would be found out. But they were found out anyway, and it resulted in jail time for executives involved, lost jobs, a dissolved company, and huge losses for investors. That is an extreme example that affected thousands of people and millions, if not billions, of dollars.

Most of the time, the corners cut are not as big as the ones cut by the managers at Enron. They are much smaller—ignoring a safety regulation, some fudging of the numbers, ignoring or covering up breaches in policy or law (discrimination or sexual harassment, for example), fast tracking contracts in ways that are illegal or against policy, or taking action for personal gain (such as kickbacks or bribes). Some of these are usually done with the best intentions in the world. People want to be successful, and they want their organization/agency/department/project to be seen as a success. Maybe they fear failure or being fired. Maybe something is needed in the field immediately. But actions that break a policy, regulation, or law can have more serious consequences. You can lose your job and you can also face jail, lawsuits, or large fines.

Shortcutting Processes

In the government and in the private sector, standards and processes set the structure, framework, and baseline for your work in most managerial jobs, especially project management. They ensure that things are done the same way each time. Processes keep you out of the doghouse and give your actions more chance of success through the use

of proven methodologies. Sometimes managers see processes as being bureaucratic, labor (or paperwork) intensive, and slow. So they take shortcuts.

There are two things to remember about the way processes should be structured. First, they should be flexible. Processes should provide guidance only and should not necessarily provide rules locked in concrete. Managers and their people should have the capability to bypass or modify some processes—in certain cases. That is not a license for people to do what they want when they want. The departure from a given process should be approved or acknowledged by the overall manager and coordinated with those involved.

Second, processes should be tailorable, especially for projects. People should be able to adjust processes based on certain parameters, such as the size, type, or length of the project. Tailoring can eliminate certain requirements that are not appropriate, such as lengthy, complex plans for a short, simple project. The same goes for processes in everyday work. When special circumstances arise, you have to be able to adjust the process to meet the circumstances.

What happens too often is that people—managers and workers both—bypass the processes to try to save a little time or effort. When they skip steps or ignore the process entirely, things get missed or mistakes are made. Appropriate test plans and testing are a perfect project-related example. If good processes aren't followed, it costs more time and effort to correct the errors made or the problems caused. If a process has problems or is inefficient, then change or improve it.

Wrong Personnel or Equipment

Hiring good people and putting them in the right positions is a must. Weak employees or even good employees in the wrong jobs can cause significant problems, but sometimes managers take shortcuts there too. It is easier to let a weak employee slide than to go through the effort of making him or her better or undergo the documentation and firing process. Without good employees in the right positions, it can take much more work to get anything done, and you need more people. That lowers productivity and raises the cost of the work and the length of time to get work accomplished. Also, your good people may get tired of babysitting or doing more than their share of the work and quit. It can be the same with an employee in the wrong job.

Most of us have learned through experience that the best way to get things right every time is to have the right equipment for the job. Skimping and cutting corners will only lead to problems down the road. Unfortunately, there are situations (especially in poor economic times and tight budgets) and managers that don't allow for purchase of the best—and perhaps more expensive—equipment. "Value engineering" is a regrettable byproduct of budget constraints. But there are some situations that just don't lend themselves to value



When you skip steps or ignore the process entirely, things get missed or mistakes are made.

engineering. One of those is IT equipment. When it comes to deploying IT equipment and software, you must have the right stuff. You don't necessarily need the best, latest, or most expensive, but you do need what will get the job done in the most efficient manner. Getting a cheaper computer, for example, may not give you the speed or memory that is needed. That is frustrating to the user and costly in time and money, as the computer will probably need to be replaced faster. Also, don't just look at what you need today, but look at tomorrow, next week, and next month.

Cutting Quality

Tough economic times may make cutting costs a necessity. We've seen that in DoD and the private sector. Both government and companies are tightening their cost control measures. Many in the private sector are going out of business because they can't cut enough. Cutting quality is not a very wise way to cut costs, though. It can backfire, and it can be dangerous for our warfighters who may need specific equipment and quality items to save lives and protect themselves.

When you have to cut costs, save where they matter the most. Don't just pinch pennies for the present. Make sure your savings will pay off in the long run. Compromising on quality might cost you later on in repairs and replacements, or it might cost lives. Cutting product quality is a type of corner cutting that can be dangerous to everyone involved.

Ignoring Risks

When you cut corners, you are taking a risk. Sometimes taking risks is all well and good. The problem that frequently occurs is that people ignore the risks. If you don't identify, assess, and respond to risks, your work could go down the tube and take you with it.

You always live with the possibility that events, actions, and decisions may cause adverse effects in your world as a manager. Common sense says that cutting corners will increase the risks that something will go wrong, some problem will surface, or something will be missed. You can't ignore the risks. There are going to be consequences for every decision that you make or action that you take, and

some of them are going to be bad. You can't get around that. The more risks that you take, the higher probability that those consequences will be negative. That's what frequently happens when cutting corners.

Lying or Covering Up Problems

Always be ethical, accountable, and trustworthy. Lying or covering up problems will lead to additional problems for you, the project, and everyone concerned. Just remember that lies will eventually be found out, and the results are almost always bad.

Bad Management Techniques

Many times, when a manager starts to cut corners, good management techniques go out the door. Managers quit sharing information, don't spend enough time with their people, don't treat their people as individuals, don't provide good paperwork on their people, and so on. The manager becomes so focused on what he is doing that he forgets or ignores what he has learned.

The idea of cutting corners usually comes up when there is some kind of time or financial crunch, and the shortcut looks like a possible solution to whatever problem is currently at the top of the list. It also comes up during times of increased stress levels. Managers tend to become grouchy and short tempered. They resort to techniques such as "do it because I said so," or they try to manage by fear and ridicule. It doesn't work—at least not for long.

Final Thoughts

Cutting corners just doesn't work in the long run. If you make cutting corners a habit, you won't be prepared to do the right thing when it is necessary. You will always be looking for the easy way out. Inevitably, you will come up short, and the corners you cut will have to get bigger and bigger. You begin to rationalize your actions. It could even get to the point where sabotaging competitors or co-workers will become necessary.

You might rationalize that everybody does it. Success accomplished in wrong ways, however, can breed arrogance, and that arrogance can make you feel that the rules no longer apply or you won't get caught. Don't fall into that mindset because eventually you will be caught. Just remember:

- Don't cut corners
- Don't look for the easy way out
- Do the right thing, even if it the hardest thing to do
- Don't bend your ethics for the illusion of success.

These guidelines also apply to your life outside of work, as they'll help make you a better person.

The author welcomes comments and questions and can be contacted at rwturk@aol.com.

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Learning to Swim in the Ocean

Creativity as a Zone of Analogy

Christopher R. Papparone



Have you noticed the dominant narratives of our senior officers and civilians calling for greater critical and creative thinking in their subordinates? Here are a few examples:

- “For the kinds of challenges America faces and will face, the armed forces will need principled, creative, reform-minded leaders, men and women who ... want to do something, not be somebody.” (Secretary of Defense Robert Gates, remarks at Maxwell-Gunter Air Force Base, Montgomery, Ala., April 2008)
- “... We’re doing things that we had not planned on doing, had not trained to do. ... They’re very adaptive, very creative, very innovative. And they do it unbelievably well.” (Chairman of the Joint Chiefs of Staff Adm. Mike Mullen commenting on the National Guard, February 2010)

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- “‘Over-proceduralization’ inhibits the commander and staff’s critical thinking and creativity, which are essential to finding a timely solution to complex problems.” (U.S. Joint Forces Command Commander Gen. J. N. Mattis, Vision of a Joint Approach to Operational Design, October 2009)

Is creativity strictly an unexplainable, mysterious process? Can there be a science of creative thinking?

Indeed, faced with the reconceptualizations of postmodern war and an array of emergent wily, adaptive enemies, defense professionals have been paying far more attention to the value of creative thinking. The hope is that we will be able to outthink our foes and remain more competitive in the globally interconnected environment. Yet what do we know about creative thinking? Where does creativity come from? Is creativity strictly an unexplainable, mysterious process? Can we critically examine how imagination works? Can there be a science of creative thinking?

Using Past Meanings for Future Concepts

In his book *The Logic of Scientific Discovery*, Karl Popper, a social and political philosopher of the 20th century, said, “... there is no such thing as a logical method of having new ideas,” claiming that a mysterious form of irrationality is at work. On the other hand, some who have studied in the field of cognitive linguistics (the science of how language is conceptually constructed) have disagreed. One such pioneering philosopher-scientist was Donald A. Schön. In his 1963 book *Displacement of Concepts*, he developed a theory of metaphoric reasoning—how humans create new meanings from old. Ironically, Schön had to employ metaphoric reasoning (“giving a thing a name that belongs to something else”) to explain how metaphor works; he used the biological theory of evolution, substituting a human learning process for natural selection. Here is an excerpt from his book in which Schön imaginatively uses a learning-to-swim metaphor to describe the creative process in the evolution of meaning:

A child who has learned to swim in a pool learns for the first time to swim in the ocean. He has material to work with, patterns of expectation and response. But as he first encounters waves and the buoyancy of salt water, everything he has learned to do must shift. He must learn and adapt, but he does not start from scratch. His old way of swimming is displaced to the new situation.

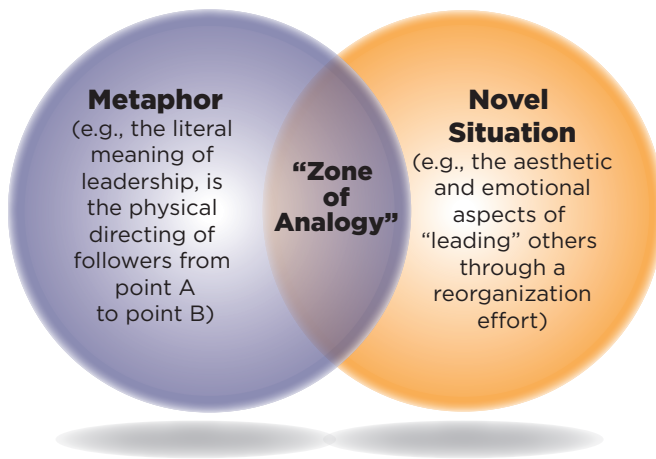
The point is that when we are faced with novel, perplexing situations, we can rely only on past meanings to make sense of them (like Schön tried to communicate with his child swimmer metaphor). As we err (i.e., we discover that these old meanings do not work well in explaining the way the world appears to us now), we reinterpret those meanings into something new and tentative. As time goes on, we elaborate on this temporary use of borrowed meanings and eventually adopt them into our more permanently accepted language that reflects the way things are. We tend to lose touch with old meanings and the reconceptualizations become part of our “normal” language (hence, the originating terms become “dead metaphors”)—Schön calls this process “extension and replacement.”

Metaphor and Analogies in Leadership Terminology

Schön brings his theory to light in his example of how the Western theory of leadership evolved. In *Displacement of Concepts*, Schön argues that the idea of leadership was “displaced from theories of travel, passage, or directed movement from one place to another.” Note how transpositions of the travel concept take us to conceptually link the following concrete intimations to leadership: go first, guide, path, direct, indirect, follow, explore, and so on. Conceptual extensions may include answering these questions: Is it better for a leader to *sail* the organization or *powerboat* the organization on its *journey*? How can we change the *direction* of the organization? What is the strategic *end-state*? Can we publish a strategic *road map* to get to our *destination*? Should senior leaders have a *vision* further out than we *followers* can see (to the point that they have *super-vision*)? Eventually, those questions became hypotheses that theorists have used to replace the original, concrete idea of leadership as a function of travel. Today, the concept of leadership continues to be extended and replaced in very elaborate ways.

Schön warns us that analogy and metaphor are not synonymous terms. We can become too complacent in using only the analogous portion of metaphors (what I call the “zone of analogy”). Critical reflection about our use of metaphor is an important check on the efficacy of new concepts based on old ones. Using analogous meaning to describe a novel situation will always be underdeveloped because even the most elaborate metaphor contains irrelevant meaning as well as relevant (analogous) meaning. In other words, we tend to focus our attention on the metaphoric content that provides analogous understanding and miss the incompleteness of larger metaphoric frame. For example, when Western theorists originally conceptualized leadership as a theory of travel, they probably missed the important contextual meanings (aesthetic and emotional) of human relationships that we experience in such things as reorganizations (see the figure on the following page). Leveraging and extending the zone of analogy is a powerful way to communicate about novel experiences (past, present, or those envisioned for the future), but, according to Schön, critical reflection is about

Zone of Analogy



paying “attention on the nature of the relation between the old concept and the new situation...” (i.e., being mindful of the inadequacies of metaphoric reasoning).

“Leadership” has been reconceptualized as something greater than the literal meaning of the term. According to Schön, the term has evolved beyond the physical aspects of its original meaning associated with travel. The zone of analogy represents the sameness of meaning that exists with respect to the original meaning. Facing a novel situation requires the creative extension of old meaning and the replacement with new meaning.

Using Metaphors and Analogies in DoD

This view of continuously reconceptualizing the world should give us pause to think both creatively and critically. Many of our professional knowledge structures are temporary elaborations and replacements of older structures. When new sciences emerge, such as those based in complexity and chaos theories, we can re-conceive and replace old constructions with new imaginations. For example, when 19th century war theorist Carl von Clausewitz introduced the metaphors of friction and center of gravity in his book *On War*, he was limited in his ability to extend and replace the metaphors drawing on the state of Newtonian science in his time. Clausewitz extended his descriptions of friction in war to his readers as images of trying to walk through water. Since then, many military theorists have published on the concept of friction, extending and replacing his original metaphor with new elaborations. Like Clausewitz, modern war theorists draw upon the sciences (and humanities and fine arts) of their time. Compare, for example, Clausewitz’s Newtonian metaphors to the post-Newtonian descriptions borrowed from 20th century complexity science and its derivative biological theory of self-organizing systems (like swarming bees). In the latest version of the Capstone Concept for Joint Operations, signed by current Chairman of the Joint Chiefs of Staff Adm. Mike Mullen, take note of

this extended, post-Newtonian science metaphor based on swarm intelligence behavior of bees:

Based on an underlying modular structure down to small-unit levels, joint forces will routinely and smoothly aggregate and disaggregate into temporary joint formations of different sizes depending on the nature and scale of operations.

There are other recent examples in the Department of Defense of the creative use of metaphoric extensions and replacements. Former Secretary of Defense Donald Rumsfeld frequently used the term “transformation” from a biological (complex adaptive systems) metaphor to describe the adaptive nature of change necessary for the future joint force. Current Secretary of Defense Robert Gates has referred to physical, sense-of-touch metaphors to describe a needed refocusing of our military capabilities, such as used in a November 2007 speech at Kansas State University: “... I am here to make the case for strengthening our capacity to use ‘soft’ power and for better integrating it with ‘hard’ power.” In 2008, the Army published its new operations doctrine by adapting the term “full spectrum” (borrowed from the science of light) to indicate its multifaceted participation in the conduct of complex operations.

There is no doubt of the attention paid by senior leaders in the United States to critical and creative thinking. Defense professionals interested in creative thinking should be aware of the evolutionary processes of metaphoric reasoning. According to Schön’s descriptive theory, the professional body of knowledge we share in the defense community can be imaginatively manipulated and purposefully reconceptualized when discovered to be unsuitable for making sense of novel, perplexing situations. In fact, Schön postulated that all language is metaphorical; hence, it exists in a constant state of flux and creative renewal that will never be complete. How purposeful and effective that renewal will be depends upon professionals being critically mindful of this evolutionary process of creative thinking. Indeed, Schön cautioned professionals to reflect as if “removing the film of obviousness that covers our way of looking at the world.” In my terms, defense professionals must swim beyond the zones of analogy and become more attentive as oceans of new metaphors become available—metaphors that will help deepen our appreciation of the otherwise perplexing novelty of the postmodern world.

If readers are interested in reading more on this topic, I recommend a newly published book by Antoine Bousquet, *The Scientific Way of Warfare: Order and Chaos on the Battlefields of Modernity*. This international relations scholar does a commendable job of applying Schön’s descriptive theory to explaining the evolution of concepts in warfare.

The author welcomes comments and questions and can be contacted at christopher.paparone@us.army.mil.

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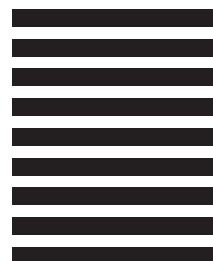
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Surfing the Net

ACQuipedia

<https://acquipedia.dau.mil>

Online encyclopedia that provides the acquisition workforce with quick access to information on common acquisition topics.

Acquisition Central

<http://acquisition.gov>

Shared systems and tools to support the federal acquisition community and business partners.

Acquisition Community Connection

<http://acc.dau.mil>

Policies, procedures, tools, references, publications, Web links, and lessons learned for risk management, contracting, system engineering, TOC.

Aging Systems Sustainment and Enabling Technologies

<http://asset.okstate.edu>

Government-academic-industry partnership. ASSET program-developed technologies and processes expand the DoD supply base, reduce time and cost of parts procurement, enhance military readiness.

Air Force (Acquisition)

<www.safaq.hq.af.mil>

Policy; career development and training opportunities; reducing TOC; library; links.

Air Force Institute of Technology

<www.afit.edu>

Graduate degree programs and certificates in engineering and management; Civilian Institution; Center for Systems Engineering; Centers of Excellence; distance learning.

Air Force Materiel Command Contracting Laboratory's FARSite

<http://farsite.hill.af.mil>

FAR search tool; *Commerce Business Daily* announcements (CBDNet); *Federal Register*; electronic forms library.

Army Acquisition Support Center

<http://asc.army.mil>

News; policy; *Army AL&T Magazine*; programs; career information; events; training opportunities.

Army Training Requirements and Resources System

<https://www.atrs.army.mil>

Army system of record for managing training requirements.

Assistant Secretary of the Army (Acquisition, Logistics & Technology)

<https://www.alt.army.mil>

ACAT Listing; ASA(ALT) Bulletin; digital documents library; links to other Army acquisition sites.

Association for the Advancement of Cost Engineering International

<www.aacei.org>

Planning and management of cost and schedules; online technical library; bookstore; technical development; distance learning.

Association of Old Crows

<https://www.myaac.org>

News; conventions, courses; *Journal of Electronic Defense*.

Association of Procurement Technical Assistance Centers

<www.ptac-us.org>

PTACs nationwide assist businesses with government contracting issues.

Best Practices Clearinghouse

<https://bpch.dau.mil>

The authoritative source for acquisition best practices in DoD and industry. Connects communities of practice, centers of excellence, academic and industry sources, and practitioners.

Central Contractor Registry

<http://www.ccr.gov>

Registration for businesses wishing to do business with the federal government under a FAR-based contract.

Committee for Purchase from People Who are Blind or Severely Disabled

<www.abilityone.gov>

Information and guidance to federal customers on the requirements of the Javits-Wagner-O'Day (JWOD) Act.

Defense Acquisition Portal

<https://dap.dau.mil>

One-stop source for acquisition information and tools.

Defense Acquisition University and Defense Systems Management College

<www.dau.mil>

DAU iCatalog; DAU/DSMC course schedules; educational resources; and *Defense AT&L* magazine and *Defense Acquisition Review Journal*.

DAU Alumni Association

<www.dauaa.org>

Acquisition tools and resources; links; career opportunities; member forums.

Defense Advanced Research Projects Agency

<www.darpa.mil>

News releases; current solicitations; *Doing Business with DARPA*.

Defense Information Systems Agency

<www.disa.mil>

Defense Information System Network; Defense Message System; Global Command and Control System.

Defense Modeling and Simulation

<http://www.msco.mil>

DoD modeling and simulation master plan; document library; events; services.

Defense Spectrum Organization

<http://www.disa.mil/dso/>

Operational spectrum management support to the Joint Staff and COCOMs; conducts R&D into spectrum-efficient technologies.

Defense Technical Information Center

<www.dtic.mil>

DTIC's scientific and technical information network (STINET) is one of DoD's largest available repositories of scientific, research, and engineering information. Hosts over 100 DoD websites.

Department of Commerce, Defense Priorities and Allocations System

<www.bis.doc.gov/dpas>

DPAS regulation, policies, procedures, and training resources.

Deputy Chief Management Officer

<http://www.defenselink.mil/dcmo/index.html>

Information on the Defense Business Transformation Agency and the DoD Performance Improvement Officer.

Deputy Under Secretary of Defense for Acquisition and Technology

<www.acq.osd.mil/at>

Acquisition and technology organization, goals, initiatives, and upcoming events.

Director, Defense Procurement and Acquisition Policy

www.acq.osd.mil/dpap

Procurement and acquisition policy news and events; reference library; acquisition education and training policy, guidance.

DoD Defense Standardization Program

<www.dsp.dla.mil>

DoD standardization; points of contact; FAQs; military specifications and standards; newsletters; training; nongovernment standards; links.

DoD Enterprise Software Initiative

<www.esi.mil>

Joint project to implement true software enterprise management process within DoD.

DoD Inspector General Publications

<http://www.dodig.mil/PUBS/index.html>

Audit and evaluation reports; IG testimony; planned and ongoing audit projects of interest to the AT&L community.

DoD Office of Technology Transition

www.acq.osd.mil/ott

Information about and links to OTT's programs.

DoD Systems Engineering

<http://www.acq.osd.mil/sse>

Policies, guides and information on SE and related topics, including developmental T&E and acquisition program support.

Earned Value Management

www.acq.osd.mil/pm

Implementation of EVM; latest policy changes; standards; international developments.

Electronic Industries Alliance

www.eia.org

Government relations department; links to issues councils; market research assistance.

FAIR Institute

<http://www.thefairinstitute.org>

Organization that promotes a federal acquisition system that continually innovates, exceeds world class standards of performance, and ensures the prudent use of taxpayer dollars.

Federal Acquisition Institute

www.fai.gov

Virtual campus for learning opportunities; information access and performance support.

Federal Acquisition Jumpstation

<http://prod.nais.nasa.gov/pub/fedproc/home.html>

Procurement and acquisition servers by contracting activity; CBDNet; reference library.

Federal Aviation Administration

<http://fast.faa.gov>

Online policy and guidance for all aspects of the acquisition process.

Federal Business Opportunities

www.fedbizopps.gov

Single government point-of-entry for federal government procurement opportunities over \$25,000.

Federal R&D Project Summaries

<http://www.osti.gov/fedrnd>

Portal to information on federal research projects; search databases at different agencies.

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Surfing the Net



Fedworld Information

www.fedworld.gov

Central access point for searching, locating, ordering, and acquiring government and business information.

Government Accountability Office

<http://gao.gov>

GAO reports; policy and guidance; FAQs.

General Services Administration

www.gsa.gov

Online shopping for commercial items to support government interests.

Government-Industry Data Exchange Program

<http://www.gidep.org>

Federally funded co-op of government-industry participants, providing electronic forum to exchange technical information essential to life cycle development.

Integrated Dual-Use Commercial Companies

www.idcc.org

Information for technology-rich commercial companies on doing business with the federal government.

International Society of Logistics

www.sole.org

Online desk references that link to logistics problem-solving advice; Certified Professional Logistician certification.

International Test & Evaluation Association

www.itea.org

Professional association to further development and application of T&E policy and techniques to assess effectiveness, reliability, and safety of new and existing systems and products.

Joint Capability Technology Demonstrations

www.acq.osd.mil/jctd

JCTD's accomplishments, articles, speeches, guidelines, and POCs.

Joint Interoperability Test Command

<http://jitic.fhu.disa.mil>

Policies and procedures for interoperability certification; lessons learned; support.

Library of Congress

www.loc.gov

Research services; Copyright Office; FAQs.

MANPRINT (Manpower and Personnel Integration)

www.manprint.army.mil

Points of contact for program managers; relevant regulations; policy letters from the Army Acquisition Executive; briefings on the MANPRINT program.

NASA's Commercial Technology Office

<http://technology.grc.nasa.gov>

Promotes competitiveness of U.S. industry through commercial use of NASA technologies and expertise.

National Contract Management Association

www.ncmahq.org

Educational products catalog; publications; career center.

National Defense Industrial Association

www.ndia.org

Association news; events; government policy; *National Defense* magazine.

National Geospatial-Intelligence Agency

www.nima.mil

Imagery; maps and geodata; Freedom of Information Act resources; publications.

National Institute of Standards and Technology

<http://www.nist.gov>

Information about NIST technology, measurements, and standards programs, products, and services.

National Technical Information Service

www.ntis.gov

Online service for purchasing technical reports, computer products, videotapes, audiocassettes.

Naval Air Systems Command

www.navair.navy.mil

Provides advanced warfare technology through the efforts of a seamless, integrated, worldwide network of aviation technology experts.

Naval Research Laboratory

<http://www.nrl.navy.mil>

Navy and Marine Corps corporate research laboratory. Conducts scientific research, technology, and advanced development.

Naval Sea Systems Command

www.navsea.navy.mil

TOC; documentation and policy; reduction plan; implementation timeline; TOC reporting templates; FAQs.

Navy Research, Development, and Acquisition

<http://acquisition.navy.mil/rda>

Policy documents; career management; Acquisition One Source page, providing links to acquisition communities of practice.

Office of Naval Research

<http://www.onr.navy.mil>

News and announcements; publications and regulations; technical reports; doing business with the Navy.

Open Systems Joint Task Force

www.acq.osd.mil/osjtf

Open systems education and training opportunities; studies and assessments; projects, initiatives and plans; library.

Parts Standardization and Management Committee

www.dscc.dla.mil/programs/psmc

Collaborative effort between government and industry for parts management and standardization through commonality of parts and processes.

Performance-Based Logistics Toolkit

<https://acc.dau.mil/pbltoolkit>

Web-based 12-step process model for development, implementation, and management of PBL strategies.

Project Management Institute

<http://www.pmi.org>

Program management publications; information resources; professional practices; career certification.

Small Business Administration

www.sba.gov

Communications network for small businesses.

DoD Office of Small Business Programs

www.acq.osd.mil/osbp

Program and process information; current solicitations; Help Desk information.

Reliability Information Analysis Center

<http://theRIAC.org>

DoD-funded DTIC information analysis center; offers reliability, maintainability, quality, supportability, and interoperability support throughout the system life cycle.

Software Engineering Institute (SEI)

www.sei.cmu.edu

Advances software engineering principles and practices as well as computer security, and process improvements.

Software Program Managers Network

www.spmn.com

Supports project managers, software practitioners, and government contractors. Contains publications on highly effective software development best practices.

Space and Naval Warfare Systems Command

<https://e-commerce.sscno.nmci.navy.mil>

SPAWAR business opportunities; acquisition news; solicitations; small business information.

System of Systems Engineering Center of Excellence

www.sosece.org

Advances the development, evolution, practice, and application of the system of systems engineering discipline across individual and enterprise-wide systems.

Under Secretary of Defense for Acquisition, Technology and Logistics

www.acq.osd.mil

USD(AT&L) documents; streaming videos; links.

U.S. Coast Guard

www.uscg.mil

News and current events; services; points of contact; FAQs.

U.S. Department of Transportation Maritime Administration

www.marad.dot.gov

Information and guidance on the requirements for shipping cargo on U.S. flag vessels.

Links current at press time. To add a non-commercial defense acquisition/acquisition and logistics-related website to this list, or to update your current listing, please e-mail your request to [datl\(at\)dau.mil](mailto:datl(at)dau.mil). Your description may be edited and/or shortened. DAU encourages the reciprocal linking of its home page to other interested agencies. Contact: [webmaster\(at\)dau.mil](mailto:webmaster(at)dau.mil).

Defense AT&L Writer's Guidelines in Brief

Purpose

Defense AT&L is a bi-monthly magazine published by DAU Press, Defense Acquisition University, for senior military personnel, civilians, defense contractors, and defense industry professionals in program management and the acquisition, technology, and logistics workforce. The magazine provides information on policies, trends, events, and current thinking regarding program management and the acquisition, technology, and logistics workforce.

Submission Procedures

Submit articles by e-mail to [datl\(at\)dau.mil](mailto:datl(at)dau.mil) or on disk to: DAU Press, ATTN: Carol Scheina, 9820 Belvoir Rd., Suite 3, Fort Belvoir VA 22060-5565. Submissions must include the author's name, mailing address, office phone number, e-mail address, and fax number.

Receipt of your submission will be acknowledged in five working days. You will be notified of our publication decision in two to three weeks.

Deadlines

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

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

Audience

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

Style

Defense AT&L prints feature stories focusing on real people and events. The magazine also seeks articles that reflect your experiences and observations rather than pages of researched information.

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

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

Length

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

Format

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