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OCTOBER-DECEMBER 2016

ACQUISITION REFORM

1989 ◀ BERLIN WALL FALLS

1990-1991
OPERATIONS DESERT SHIELD & DESERT STORM

1992
Defense Acquisition University founded

'Road Ahead' report from USD(AT&L) (Gansler)

2000

1993
◀ National Performance Review

1994
◀ Secretary of Defense William J. Perry's 'Acquisition Reform: A Mandate for Change'

1996
◀ Clinger-Cohen Act

2001
9/11 ATTACKS ▶ ON WORLD TRADE CENTER AND PENTAGON

2001
OPERATION ENDURING FREEDOM BEGINS IN AFGHANISTAN

2001
◀ Rumsfeld challenge from President Bush

2005
◀ 'Reexamining Military Acquisition Reform' –RAND Corp. study

2007
◀ Gansler Commission report on Army expeditionary contracting

2009
Weapon Systems Acquisition Reform Act

2010
USD(AT&L) releases Better Buying Power initiative ▼

2014
▲ 'Defense Acquisition Reform: Where Do We Go From Here?' –Senate committee report

2015 2016
National Defense Authorization Act for Fiscal Year 2016 ▶

'GROUNDHOG DAY' ALL OVER AGAIN
Acquisition reform is on the table, but will it happen?

SEIZING THE ADVANTAGE
The Army creates a Rapid Capabilities Office to address new threats

'AT THE NUCLEAR BRINK'
William J. Perry talks acquisition reform, program managers and nuclear catastrophe

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ARMY AL&T

OCTOBER-DECEMBER 2016

FEATURES

FROM THE AAE

ACQUISITION

ON THE COVER

Defense acquisition reform has followed a long, winding and often contentious road, marked by research efforts, legislative developments and innovative programs. But this go-round could see significant change, if we can incorporate lessons learned from decades of global conflicts and political shifts and craft an approach that ensures readiness in the face of ever-evolving threats.

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OCTOBER-DECEMBER 2016

FEATURES

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By Valerie Inge

PEO C3T DEVELOPS BROAD-BASED APPROACH TO LEVERAGE INDUSTRY INNOVATION

By Bridget Lynch

ARMY WAR PLANS FOR ITS NEW JOINT LIGHT TACTICAL VEHICLE

By Kris Osborn

DOD SUPERCOMPUTING INSPIRES INTERNS, HELPS ARMY RESEARCHERS

By David McNally

FACES OF THE FORCE: ORLANDO "FRITZ" GORDON

The man behind the HELLFIRE Romeo

By Mary Kate Aylward

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Explore the timeline on defense acquisition reform from 1945 to 2015 in "**'GROUNDHOG DAY' ALL OVER AGAIN**."

Read about how the Enhanced Army Global Logistics Enterprise program improves the efficiency of service contracts in "**CORRALLING CONTRACTS**."

See the facilities of the U.S. Army Research Laboratory and read about the Army engineer studying pyroelectric power in "**AN ATOMIC ENGINE THAT HAS ALL OF THE POWER BUT NONE OF THE MOVING PARTS**."

See a timeline on defense acquisition reform and read the history of acquisition reform since the 1960s; read the Army RD&A article and the GAO report on the 1981 Carlucci Initiatives in "**REFORM, REAGAN-STYLE**."

Read the three key studies on employees that provide the insights about inspiring the Army Acquisition Workforce behind "**REFORMING MOTIVATION**."

Watch a 1970s laser-guided, 155 mm artillery projectile known as Copperhead, which serves as a cautionary tale about the importance of a strong and clear problem statement, in "**WHAT'S YOUR PROBLEM?**"

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From the Editor-in-Chief

@ Email Nelson McCouch III
ArmyALT@gmail.com

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I know what you're thinking as you look at the theme for this issue: "Really, acquisition reform again? Didn't we just do that?" Or, more to the point, "It's beyond repair. Why bother?"

If acquisition reform were a straight-up matter of making what the military needs, it would be a simple 1+1=2 equation: Figure out what you need, build it and deploy—but it's not. Billions of dollars equals thousands of manufacturers, which equals hundreds of senators and representatives vying for a piece of the pie for their constituents, which equals jobs. As former House Speaker Thomas P. "Tip" O'Neill is often quoted as saying, "All politics is local."

To ensure that taxpayers' dollars are spent responsibly, there are countless laws and policies in place, and congressional oversight. The House and Senate produce an annual National Defense Authorization Act (NDAA) that guides overall defense spending and even drills down to the type of equipment the military should have and where it will be stationed. Sometimes lost in the shuffle is the military's primary challenge of identifying threats and needed equipment far enough in advance to be able to conceive, build and deploy the equipment before it becomes obsolete. Given all the above, you can appreciate that the challenge of acquisition reform is vastly complex. It sure ain't easy!

Nonetheless, acquisition reform is underway once again. This time, it is seeing some progress in the hands of House Armed Services Committee Chairman Mac Thornberry, R–Texas. His legislation, now part of the NDAA for FY17, aims to thin out regulations that focus more on paperwork than production, correct incentives that lead to poor performance, and increase accountability for acquisition projects. However, the Senate version of the NDAA would introduce more sweeping than incremental changes, decentralizing DOD-level acquisition authority and empowering the service chiefs to regain responsibility for acquisition programs.

At this writing, the House and Senate versions have yet to be reconciled. In any case, President Obama has threatened to veto both bills, warning that "these changes would roll back the acquisition reforms of the last two decades."

Not all of the action is on Capitol Hill, though. The Army acquisition executive (AAE), the Hon. Katrina McFarland, isn't waiting for a final decision on the NDAA. Since becoming AAE in February, she has focused on how to reset and rebuild acquisition, albeit with fewer people and more tasks than ever. According to McFarland, we've lost sight of the mission to equip the force and instead have been caught up in the bureaucracy.

Notably, McFarland favors putting the Army chief of staff in the center of acquisition processes to ensure that the Army develops requirements that are in sync with procurement decisions. She also wants to restore capabilities to the acquisition workforce—such as operational research scientists and advisers, the people who weigh the threat from an operational point of view, not just in terms of materiel solutions—that the Army lost as a result of misapplied Goldwater-Nichols Act provisions. McFarland also wants acquisition to happen more rapidly; to accomplish that, she fully supports the establishment of the Army's Rapid Capabilities Office. (See "Seizing the Advantage," Page 30.)

To get needed capabilities to Soldiers as quickly as possible is the job of Army program executive offices (PEOs) and the 37,000-strong acquisition workforce. In so many respects, reform is a job best done at the program level. See how the Joint PEO for Chemical and Biological Defense is looking to streamline acquisition by "tailoring" oversight and management, in "Catch 5000.02," Page 129. In "Interservice Integration" on Page 94, see how, despite reform being an "echelon above reality," the Army and Air Force teamed up in Qatar to contract for construction together.

Our biannual readership survey will launch this month, so please take it and let us know how we're doing and what we can do better!

If you have ideas for an upcoming magazine theme, an idea for an article you would like to write or like to see us write, or just a comment, please contact me at **ArmyALT@gmail.com.**

Nelson McCouch III
Editor-in-Chief

STAYING ON TARGET

A Soldier checks his vehicle's Common Remotely Operated Weapon Station before a materiel fielding and training exercise hosted by the 88th Regional Support Command (RSC) at Fort McCoy, Wisconsin, April 21. The exercise was part of TACOM training that aims to improve operational readiness—the top priority for Army Chief of Staff Gen. Mark Milley, and one that calls for acquisition professionals to take a new look at their efforts of stewarding the shrinking pool of taxpayer dollars. (Photo by Catherine Threat, 88th RSC)

FROM THE ARMY
ACQUISITION EXECUTIVE
THE HONORABLE KATRINA MCFARLAND

AFFORDABLE, NOT CHEAP

Overcoming acquisition reform challenges with cost-saving solutions

Following his confirmation as secretary of the Army in May 2016, the Hon. Eric Fanning listed acquisition reform as one of his top priorities for enhancing the Army's force readiness. Acquisition reform has been of particular focus in the Army acquisition community as we face the challenges of continued budgetary instability. Against that backdrop of a constrained fiscal environment, and as part of a larger movement toward enhancing readiness across the force, this endeavor calls for a whole-Army approach to rethinking how we conduct acquisition.

Acquisition reform does not rest solely in the hands of one community or another. Just as every Soldier is vulnerable to ever-increasing threats, the responsibility falls to each Soldier and to each individual across the Army to demonstrate sensitivity with resources and thereby strengthen the acquisition reform process as a whole. Every Soldier and Army civilian holds a duty to be efficient stewards of taxpayer dollars, doing his or her part to equip Soldiers with the materiel solutions needed for mission dominance while remaining cognizant of declining budgets. This issue of Army AL&T explores how we, as Army professionals, can come together to work toward the goal of strengthening our acquisition practices.

WITHIN STRYKING DISTANCE

The new Rapid Vehicle Provisioning System (RVPS), tested in February at Fort Bliss, Texas, reduces the time it takes to provision an entire brigade's worth of networked vehicles, including these Strykers, from six weeks to less than five days. Many project management offices are prioritizing affordable solutions like RVPS to ensure readiness and control costs. (Photo by Amy Walker, Program Executive Office for Command, Control and Communications – Tactical Public Affairs)

AFFORDABILITY OVER COST SAVINGS

There are two fundamental ways we can take on the challenge of reforming acquisition. First, we focus on affordability initiatives. I want to highlight affordability efforts in lieu of cost-saving measures. While we certainly have steadily decreasing funds with which to support our Army, we are committed to not being cut-rate in our approach to procuring weapons. By focusing on affordability over low cost, we still provide Soldiers with effective equipment while making smart choices and stretching dollars in the same way that we all would in our own households in today's economy. Affordability can mean spending slightly more on something that we know can last longer.

Prioritizing affordable solutions over cheap alternatives enables us to pay for quality, sustainability and deployability in programs. Our project management offices throughout the acquisition enterprise are already making significant progress on this front. One example comes from the Program Executive Office for Soldier, where teams are changing from a two-battery configuration on Sniper Night Sights to a single-battery configuration, which increases the battery run time. Selling the other variants back to the manufacturer and exchanging them for the best version will save the Army $4 million over the 20-year program life cycle.

DOD's Better Buying Power (BBP) provides additional guidelines for program affordability. In addition to achieving affordable programs and controlling life-cycle costs, BBP also calls for incentivizing productivity in industry and government. In Army acquisition, we welcome this challenge to incentivize

innovation and opportunities to provide better value to the Army.

Divesting programs is another way we assume positive control in times of fiscal uncertainty. As part of a broader Army modernization strategy, divestiture plays a crucial role in allowing us to make smart choices with limited funding. By divesting equipment the Army no longer needs, we can reduce our operation and sustainment costs. This reduction in cost helps us preserve our science and technology portfolio. Even in the face of austere budget realities, we cannot lose sight of strategies for future innovation.

SMARTER ACQUISITION

The Office of the Deputy Chief of Staff, G-4 is heavily invested in reaching these affordability goals. Julia Lyons, chief, Army G-4 Sustainment Maintenance Division, noted that "in this pursuit of affordability, the acquisition and sustainment communities continue to work together to shape policy, procedures and organizational changes that make acquisition, development and sustainment of software more affordable." She gave the example of post-production software support (PPSS), which includes capabilities such as software license, information assurance and vulnerability alerts, and lab and field support.

CYBER WATCH

Spc. Isaiah Anderson, an information management officer with U.S. Army Alaska (USARAK), updates the anti-virus software on an off-network computer at USARAK headquarters, Joint Base Elmendorf-Richardson, Alaska. The newly established Rapid Capabilities Office will focus on rapid prototyping of select electronic warfare equipment, including cyber capabilities, with an eye toward addressing urgent needs in contested environments while still guiding longer-term procurement strategies for broader system fielding. (Photo by Sgt. 1st Class Joel Gibson, USARAK)

Every Soldier and Army civilian holds a duty to be efficient stewards of taxpayer dollars, doing his or her part to equip Soldiers with the materiel solutions needed for mission dominance while remaining cognizant of declining budgets.

"This program risks major costs once a weapon system transitions throughout the life cycle and [is] ultimately delivered to Soldiers. The acquisition and sustainment communities have worked to make this program more affordable by implementing efficiency initiatives, divesting legacy systems, maximizing the use of enterprise license agreements, reducing configuration requirements, extending weapon system block upgrade cycles and eliminating redundant capabilities where it makes sense," she said. These efforts have reduced PPSS requirements by approximately $1 billion over the past four years and enhanced our ability to provide Soldiers with more advanced weapon systems that operate safely and securely while remaining cognizant of funding realities.

As a second means of tackling the task of acquisition reform head-on, we look to enhance the speed and efficiency of our operations. One way we are streamlining our efforts is in program requirements:

By focusing on affordability over low cost, we still provide Soldiers with effective equipment while making smart choices and stretching dollars in the same way that we all would in our own households in today's economy. Affordability can mean spending slightly more on something that we know can last longer.

the building blocks of a program's acquisition life cycle and a major determinant of the success or failure of a program. Having a series of affordable, technically sound and achievable requirements is a significant factor in an acquisition program's ability to meet cost, schedule and performance objectives. We are continuously working to better leverage our systems engineering talent during the requirements-generation process to produce trade space between requirement, total life cycle cost, schedule and risks.

FOSTERING COLLABORATION

In our efforts toward streamlining requirements, we are reinvigorating the Army Requirements Oversight Council (AROC), chaired by the Army chief of staff. Within the National Defense Authorization Act for Fiscal Year 2016, Congress legislated changes to defense acquisition and called for a review of internal processes. As part of this internal examination, renewed attention to AROC ensures that the Army's acquisition efforts are more reflective of developers and end users of Army programs. Expanding the AROC process allows the customer's voice to be heard throughout the Army's acquisition activities. AROC fosters collaboration across the requirements, resourcing and acquisition communities; enforces accountability; establishes priorities to balance resources and requirements; and ensures that the Soldier receives the right capabilities in a timeframe that guarantees the program is both relevant and within budget.

A significant step forward in increasing our efficiency and speed is in the establishment of the Army's Rapid Capabilities Office, which will rapidly develop, acquire, integrate and equip immediate and near-term materiel solutions with streamlined acquisition methods. (See "Seizing the Advantage," Page 30.) One initial focus of the new Army Rapid Capabilities Office will be the rapid prototyping and initial equipping of select electronic warfare equipment, including cyber capabilities, position, navigation and timing; radar and radio sensors to be mounted on ground vehicles, drones and

STAYING IN TOUCH

The Hon. Eric Fanning, then acting secretary of the Army, visits the Camp Atterbury-Muscatatuck Urban Training Center, Indiana in November 2015. Fanning has made acquisition reform one of his top priorities for enhancing the Army's force readiness. (U.S. Army photo by John G. Martinez)

WELCOMING PARTNERS

Maj. Gen. Douglas M. Gabram, commanding general of the U.S. Army Aviation and Missile Command (AMCOM), talks with industry representatives during the opening of AMCOM Industry Days at Redstone Arsenal, Alabama, June 15. Incentivizing productivity in industry and government is one of the aims of DOD's Better Buying Power program, and can be a vital part of improving acquisition affordability in a budget-constrained environment. (Photo by Kari Hawkins, AMCOM)

Soldier equipment. The rapid prototyping efforts undertaken by the Army Rapid Capabilities Office will address the Army's needs in contested environments but endure to inform our procurement strategies for broader fielding of systems. Accomplishing the objectives of the Army Rapid Capabilities Office will require a thorough understanding of and excellence in the acquisition process, and I am confident in our ability to rise to this challenge.

CONCLUSION

Finally, I would like to highlight what I consider to be the difference between acquisition reform and acquisition improvement. When we talk at length about acquisition reform, we are referring to our covenant with the nation: to be responsible with hard-earned tax dollars and to enable our country's sons and daughters in uniform. Acquisition improvement takes this commitment one step further. While we are undergoing significant plans to reform the acquisition process as detailed throughout this issue, we also renew our pact to the Soldier every day. Acquisition improvement is our duty to constantly work harder to guarantee that our Soldiers have the most superior capabilities available. Acquisition reform is a necessary long-term strategy; acquisition improvement is a daily renewal of our mission.

All of us in Army acquisition have a sacred responsibility to do our part in ensuring that our Soldiers are properly equipped and ready for any engagement across the globe. By taking these steps toward revamping our processes, the Army acquisition community stands ready as well to answer this call.

MR. ROBERT PUHALLA

COMMAND/ORGANIZATION:
Synchronized Fielding Division, System of Systems Engineering and Integration Directorate, Assistant Secretary of the Army for Acquisition, Logistics and Technology

TITLE:
Chief engineer

YEARS OF SERVICE IN WORKFORCE: 25

DAWIA CERTIFICATIONS:
Level III in science and technology management; Level III in test and evaluation

EDUCATION:
M.S. in mechanical engineering, Drexel University; B.S. in aerospace engineering, Pennsylvania State University

AWARDS:
Superior Civilian Service Award; Baltimore Federal Executive Board Excellence in Government Award

Get your hands dirty

Want to do your job more effectively? Consider Robert Puhalla's advice: Go talk to the people you work with and work for. "A lot of us now have amazing access to information just sitting at computers at our desks," said Puhalla, chief engineer in the Synchronized Fielding Division of the System of Systems Engineering and Integration (SoSE&I) Directorate. "But you have to get away from your desk, go work with the folks in the labs, get out to the field and experience things hands-on. There's no replacing that, even today. You don't understand the angle of the user unless you get out to the field and see how this stuff works, the goods and bads. Hear the Soldiers talk, hear the technicians talk, go through there and get your hands dirty. It's maybe a little cliché, but it's easy not to do."

The goal of synchronized fielding is to integrate tactical communication systems—including voice, video, text and data—in a smarter fashion, so that the Army is not fielding these technologies to units individually but as a package that delivers a holistic operational effect. Puhalla's job is to bring all of the different systems and organizations together to support capability set fieldings to infantry, Stryker and eventually armored brigade combat teams (BCTs).

"We work with the network and platform project managers (PMs), the Army G-staff, and TRADOC capability managers (TCMs) to ensure that each fielding answers requirements and user needs in an integrated manner," he said. "When we're successful, we avoid having to touch that unit multiple times, which not only makes sense from a technical, system-of-systems engineering perspective, but also reduces the Soldiers' training time for these critical capabilities." Puhalla and his team also work on modernization plans, "such as how we integrate the network onto the heavy platforms for armored BCTs, which have a much longer lead time for engineering and test," he said.

Puhalla's greatest satisfaction comes from earning the trust of the PMs to identify and address system-of-systems issues before they get to the unit. "Early in the

synchronized fielding process, just before the Army delivered the first capability set to two 10th Mountain Division BCTs that were about to deploy to Afghanistan with the equipment, we held an integration event at Fort Dix that identified several issues that we could fix in real time or quickly thereafter, so we could roll them into the final product before it went downrange. It felt good to help with the solution."

Puhalla joined the Army Acquisition Workforce as a member of the U.S. Army Test and Evaluation Command (ATEC) in 2001, but his federal career dates to 1989, when he worked in aerodynamics testing for the Ballistic Research Laboratory (BRL) at Aberdeen Proving Ground, Maryland. One of his first bosses was Robert L. McCoy, a well-known and published expert in ballistics.

"He was smart as a whip, and he was also a West Virginia good ol' boy who had much practical experience. So he was able to teach me not only the technical side of our work, but also the common-sense and human side of it," said Puhalla. "He would say, 'Don't try to design a fancy solution when a simple one will do. Be practical about your approach.' So that doesn't mean you don't have to think hard and work hard, but always keep in mind that practical side about what you're doing here, even in a highly technical field. Nearly 25 years later, those words have stayed with me."

BRL was absorbed by the U.S. Army Research Laboratory in 1992, and Puhalla's branch, Firing Tables and Aeroballistics, moved to the U.S. Army Armament Research, Development and Engineering Center (ARDEC) at Picatinny Arsenal, New Jersey. He left ARDEC in 1999 and worked for a contractor for a few years before returning to ATEC. "When I came back with ATEC, I was evaluating a weapon system for a helicopter. I worked with the PM shop and the TCMs to do a fair evaluation early on in the program, which was rewarding because it helped guide decisions based on what was working well and not working well through the eyes of the user."

He moved within ATEC to support testing for the Future Combat Systems (FCS) program in 2004, and joined the program management side of FCS in 2008. After the program was canceled, the integration and synchronized fielding mission eventually evolved to SoSE&I. "I've been pretty fortunate in my career. I've been able to have a wide experience, from analysis, to test, to PM, to the requirements on the Soldier side, even the contract side, where I had to worry about bringing in money for the contract. It's good to have those broadening experiences."

Puhalla continues to amass those broadening experiences with SoSE&I, which is part of the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)). Working at the ASA(ALT) headquarters level "gives me a better understanding of how the Army works from A to Z," Puhalla noted. "You don't have your PM hat on all the time, you don't have your TCM hat on all the time. You're a broker, so you try to help with those kinds of talks and negotiations and provide a fair evaluation of which position wins out for any particular day."

Looking back over his career, he added, "One thing I do wish I had pursued is the Army War College or a similar program. I think there's a lot of benefit in seeing the strategic side of how big Army works, and even with ASA(ALT) there is a limited set of goggles and lenses that we look through. Those kinds of training opportunities serve you well—even if you're not intending to be part of the Senior Executive Service—because they help you understand the big Army and why we do and don't do certain things."

He has one last piece of advice. "Follow through with your relevant training, both in your area of expertise and some outside your area of expertise. Your training should help broaden your perspective and your views. Finally, prioritize: Make sure you know what's important and what has to be done. We're all given the same amount of time; it's up to you how you choose to spend it."

—MS. SUSAN L. FOLLETT

A HISTORY OF FEDERAL SERVICE
Puhalla, left, received a certificate recognizing 25 years of federal service from Doug Wiltsie, executive director, ASA(ALT) SoSE&I Directorate, at Aberdeen Proving Ground, Maryland, in July. (Photo by Claire Heininger, ASA(ALT) SoSE&I)


Acquisition
Reform
Rumsfeld Challenge
Secretary of Defense
Management Review
Defense
Clinger-Cohen Act
Fitzhugh Commission
Goldwater-Nichols
Nunn-McCurdy Act
National Performance Review
Acquisition Reform a Mandate for Change
Secretary of Defense William J. Perry
Robertson Committee
DOD Reorganization Act
Packard Commission
Packard Initiatives
Gansler Report
$640 toilet seats
coffeemakers
$7,600
Carlucci Initiatives
Acquisition Reform
Congressional Commission on Government Procurement
Secretary of Defense Management Review
Goldwater-Nichols
National Defense Authorization Act
BBP
BBP 3.0
Weapons Systems Acquisition Reform Act
$435 hammers
Nunn-McCurdy Act
Clinger-Cohen Act
Carlucci Initiatives
Packard Commission
Better Buying Power Initiative
BBP 2.0
National Security Act
Fitzhugh Commission

'GROUNDHOG Day' All Over AGAIN

Acquisition 'reform' is on the table again, as it has been at least once each decade since the end of World War II, such that it seems like 'Groundhog Day' without Bill Murray, with the same proposals coming up again and again. But this time there's reason to believe that the current reforms aren't merely reactive but deliberate and forward-looking—and, just maybe, effective.

by Mr. Steve Stark, Ms. Margaret C. Roth and Mr. Michael Bold

The United States' dissatisfaction with its defense acquisition system and its concomitant desire to "reform" it is as old as the country itself. Given the number of blue-ribbon committees and the countless studies performed since the 1950s, it's hard to imagine any facet of government studied so many times, in more depth and, predictably or freakishly, often with similar results—sometimes exactly the same.

Reading the findings and recommendations from all those studies and reports, they very quickly become confusing rather than informative because, whether the report is from the 1970s, '80s, '90s or today, it's difficult to pin the finding to a particular era without looking at the date of the study. Take this excerpt, for example: "Federal law governing procurement has become overwhelmingly complex. Each new statute adopted by Congress has spawned more administrative regulation. As law and regulation have proliferated, defense acquisition has become ever more bureaucratic and encumbered by unproductive layers of management and overstaffing."

If that sounds familiar, it's not because it was written last year. In fact, that observation dates back 30 years, to the 1986 report of the Packard Commission, also known as The President's Blue Ribbon Commission on Defense Management. It may sound familiar because many continue to decry the morass of regulation governing defense acquisition, much of it layered on in reaction to untoward events.

If the diagnoses of the ills are similar with each go-round—burdensome regulations, cost overruns, slipping schedules, poor management or performance and a lack of incentives for success—the prescriptions are equally so: Professionalize the workforce. Buy commercial. Increase competition. Simplify. Centralize. Decentralize. Reorganize.

PLUS ÇA CHANGE

The French saying, "*plus ça change, plus c'est la même chose*," could be the definition of defense acquisition reform: The more things change, the more they stay the same.

But since it's not, it makes sense to define acquisition reform, which isn't quite so simple, as the RAND Corp. pointed out in its 2005 study "Reexamining Military Acquisition Reform: Are We There Yet?" But RAND punted that ball even as it ran with it, with a report maintaining that acquisition reform is essentially in the eye of the beholder. "We elected to treat 'acquisition reform' as being defined by whatever specific initiatives we could identify that were formally launched and pursued under the banner of 'Acquisition Reform.' "

During the 1980s, "Are We There Yet?" states, acquisition reform meant "putting controls in place to reduce 'waste, fraud, and abuse' (both real and perceived) in transactions with contractors." In the 1990s, the report adds, acquisition reform meant attempts to "make the acquisition process more responsive, effective, and efficient."

In the Center for Strategic and International Studies' "Measuring the Outcomes of Acquisition Reform by Major DOD Components," acquisition reform falls out similarly. "Historical reforms have ranged from efforts targeting perceived waste, fraud, and abuse in the 1980s, to a focus on streamlining overly rigid military specifications and processes in the 1990s, to a focus on transformational technologies under Secretary of Defense Donald Rumsfeld in the 2000s."

In a statement to the House Armed Services Committee in 2013, Moshe Schwartz, a specialist in defense acquisition, said, "Efforts to address cost overruns, schedule slips, and performance shortfalls have continued unabated, with more than 150 major studies on acquisition reform since World War II. Every administration and virtually every secretary of defense has been a party to an acquisition reform effort. Congress has also been active in pursuing reform efforts, by legislating changes through the annual National Defense Authorization Acts as well as through stand-alone legislation, such as the Federal Acquisition Streamlining Act of 1994, Clinger-Cohen Act of 1996, and the Weapon System Acquisition Reform Act of 2009."

Yet, while waste, fraud and abuse haven't been in the news much of late, cost is still an issue. Current reform proposals—an iterative approach from the House Armed Services Committee and a more structural one from the Senate Armed Services Committee (SASC), which have yet to complete the reconciliation process and both of which President Obama has threatened to veto—combine the desire to make acquisition cheaper and the imperative to make it faster.

> *"If you take government program managers and they are dealing with dedicated and experienced corporate program managers on the industry side, I think very often the government people are outgunned."*

"Cost is still an issue," said Jon Etherton of Etherton and Associates Inc. in an interview with Army AL&T in July. "I guarantee that, if we have a program that suddenly were to have serious overruns or other kinds of things that people would consider to be out of control, cost would be back on the front burner." Etherton is a respected acquisition authority, having

REFORMING ACQUISITION: A TIMELINE

1945-2015

The history of acquisition reform is marked by hundreds of important dates and events—more than we have space for, unfortunately. We've distilled the past 60 years into the pivotal items you see in the timeline that runs across the bottom of the following pages. What history writes next remains to be seen.

1947 National Security Act

- Re-forming the War Department into the Department of Defense and Joint Staff.

DISCUSSING OPTIONS

Secretary of Defense Ash Carter greets Sen. John McCain prior to testifying before the Senate Armed Services Committee on Capitol Hill in December 2015. McCain's version of the National Defense Authorization Act for FY17 calls for dividing the USD(AT&L) into two undersecretaries, one for management and support and one for research and engineering, as a move toward greater innovation to counter the diversity of enemy threats. (DOD photo by U.S. Navy Petty Officer 1st Class Tim D. Godbee)

spent 18 years as a Senate staffer, 14 of them on the SASC. Now the senior fellow for acquisition reform of the National Defense Industrial Association (NDIA), he co-authored, with Will Goodman, "Pathway to Transformation: NDIA Acquisition Reform Recommendations."

BOTH WANT IT, DEPENDING ON WHAT 'IT' IS

Perhaps the most unusual aspect of the current round of acquisition reform—in contrast to past efforts—is that both Congress and DOD are pushing for it. From one perspective, DOD got a wakeup call on 9/11 that it hasn't been fully able to answer.

Since the creation of DOD in 1949, the U.S. military has relied on a kind of technological war of attrition that either prevented adversaries from acting or made it extremely unlikely that an enemy would prevail. However, the 9/11 attacks showed that, while the U.S. might not be defeated in a conventional way, it was vulnerable to asymmetric threats that are very hard to predict and defeat. The proliferation of improvised explosive devices in Iraq and Afghanistan were examples of this paradigm, that despite spending trillions of dollars on the best, most sophisticated systems, the U.S. was vulnerable to psychologically devastating attacks from equipment as cheap and low-tech as garage-door openers, fireworks and pressure cookers.

The rapid advance of technology has made previously unattainable weapons and technology, or weaponizable technology, much more accessible to nihilistic nonstate actors, much in the same way that Amazon has obliterated the barrier to entry to book publishing, for example, or Apple has made music recording and video producing accessible to anyone with the desire to use the technology. So it may be that in this round of defense acquisition reform, DOD and Congress are finally becoming fully awake to the necessity to change the paradigm and

1947-1991
COLD WAR

1949 Hoover Commission

- Formed to recommend administrative changes in the federal government.
- Found that the military's budgeting system had broken down and urged complete overhaul.

1950-1953
KOREAN WAR

(Photo by Marine Cpl. Peter McDonald courtesy of Wikimedia Commons)

keep up with the speed of technology—ideally, to keep ahead of it. We would not need the Joint Improvised-Threat Defeat Agency, for example, if sufficiently advanced technology existed to defeat improvised threats.

At the same time, however, in addition to asymmetrical nonstate actors using cheap, off-the-shelf technology, the U.S. still has to contend with more traditional potential adversaries—states with large armies, large defense budgets and very sophisticated technologies. Add to that the experience of the wars in Afghanistan and Iraq during which the Pentagon rapidly acquired and fielded a variety of materiel, such as the Mine Resistant Ambush Protected vehicle, while traditional, multidecade procurements lumbered along.

Add to that the 2011 Budget Control Act, which created sequestration. Throw in a presidential election in which the down-ballot races appear significantly less predictable than usual, and we have a circumstance in which many may want to see some kind of reform, even regard it as urgently needed, but it's anybody's guess what will happen.

For Sen. John McCain, the Arizona Republican who chairs the SASC, reform is an absolute must. "America's broken defense acquisition system is not just a budgetary scandal. It's a national security crisis," he told War on the Rocks in July 2015. In May, he told the Brookings Institution, "Instead of one great power rival, the United States now faces a series of trans-regional, cross-functional, multi-domain and long-term strategic competitions that pose a significant challenge to the organization of the Pentagon and the military, which is often rigidly aligned around functional issues and regional geography."

"The last major reorganization of the Department of Defense," McCain continued, "was the Goldwater-Nichols Act, which marks its 30th anniversary this

CAN I GET A WITNESS?

U.S. Rep. Mac Thornberry, R-Texas, chairman of the House Armed Services Committee, questions Defense Secretary Ash Carter during his testimony on DOD's proposed FY17 budget in Washington, D.C., on March 22. Thornberry noted earlier this year that threats against the U.S. are growing in number and diversity, and said that getting better technology into the hands of the warfighter faster is an imperative. (DOD photo by Air Force Senior Master Sgt. Adrian Cadiz)

1953 DOD Reorganization Act

- Designated assistant secretaries for supply and logistics and for research and development.

1955 Robertson Committee

- Defined roles of project and program managers.

1958 Advanced Research Projects Agency established

- Formed to keep up with accelerating pace of technology.

DARPA

year." Some, however, fear that the Senate version of the FY17 National Defense Authorization Act (NDAA) would take DOD back to the pre-Goldwater-Nichols era of interservice rivalries and cost and schedule overruns. Goldwater-Nichols essentially removed the service chiefs from the acquisition chain of command, a move some see as a serious defect in the law.

The very mention of acquisition reform causes eyes to roll, as Rep. Mac Thornberry can attest from personal experience. Yet, according to Thornberry, the Texas Republican who chairs the House Committee on Armed Services, "A couple things have changed in recent years. One is the technology cycle is faster than it's ever been and it's speeding up. Secondly, we have a greater number and more diversity of serious threats than we've ever faced. So, the way I explained it to the Rotary Club back home is, if it takes us another 20 years to field the next airplane or ship, it's going to be out of date by the time it gets there and we will not be able to defend the country." Thornberry made his remarks in March at the Brookings Institution. "The necessity of getting better technology into the hands of the warfighter faster seems to me to be an imperative," he added.

Thornberry went on to say that he's a bit haunted by history. "There have been nations that have just missed a major change in warfare and have gone into decline as a result." He's concerned, he said, that history "will catch up with us someday, but if I can do anything through different reforms, whether it be the organizational reform, the personnel reform or the acquisition reform to delay that day when we go into decline, then I want to do it."

OVERSIGHT AND OVERHEAD

Personnel, organizational and acquisition reform are all important, but reform in oversight and regulation might be in order as well. In "Defense Acquisition Reform, 1960-2009: An Elusive Goal," Dr. J. Ronald Fox literally wrote the book on acquisition reform, and he provided the following breakdown of the many layers of oversight:

"Each participant in the acquisition process exercises an oversight responsibility to ensure that laws and regulations are observed and programs pursued efficiently. Consequently, there are numerous oversight and monitoring agencies. The executive branch has the Justice Department and the Office of Management and Budget; the Department of Defense and each military service have an independent inspector general and auditing office; and Congress uses the Government Accountability Office for program audits and assessment, the Congressional Budget Office for budget and program cost estimates, and the Congressional Research Service and Office of Technology Assessment for analyses. Industry has its legal resources, Washington representatives, and industry associations to protect its interests. The government manager of a major systems acquisition program must be sensitive to all participants' positions and their vested interests."

And that's not to mention the acquisition bureaucracy itself, plus the test and evaluation bureaucracy, including the powerful Office of the Director, Operational Test and Evaluation in the Office of the Secretary of Defense (OSD).

What does all that cost? What percentage of the budget for any given program or weapon system goes to overhead? On the industry side, that's easier to measure because overhead is built into the contracts. On the government side, there are no charge numbers to distinguish between direct work and overhead work. As such, it's next to impossible to measure the costs of all of those layers of bureaucracy—the personnel doing the reporting or testing or evaluating and the time it takes for people working on a program—in industry or government—to respond to all of the regulatory requirements. According to Etherton, Congress

1962 and 1964 'The Weapons Acquisition Process'

Two innovative books resulted from the three-year Harvard Business School (HBS) case study:

- Merton J. Peck and Frederic M. Scherer, "The Weapons Acquisition Process: An Economic Analysis" (Boston: Division of Research, HBS, 1962)
- Frederic M. Scherer, "The Weapons Acquisition Process: Economic Incentives" (Boston: Division of Research, HBS, 1964)

1955-1975 VIETNAM ERA

(Photo by Horst Faas via Associated Press)

A central issue in acquisition reform is how to encourage smart decision-making at every echelon of program management, working within and in spite of the unwieldy acquisition bureaucracy and understanding what will induce industry to produce the best possible product or service at the best possible price.

has no mechanism to measure the cost of oversight, whether it's necessary or non-value-added bureaucracy.

"On the government side, I really don't think that there is a real strong effort to quantify all those costs," Etherton said. That boils down to two issues—direct and indirect costs. "The direct issue is the actual cost of people to actually do all these things … and the indirect issue is that if you have all those people and you assume that [their labor] is a free good [and already paid for]—that these are just people that we have to do this—then what you also lose is any insight into the time component of this, and how much more time does that build into the process?"

Without building in some metrics for measuring the cost of oversight, Congress will never know whether, for example, a program's cost overruns on the industry side were matched by equivalent costs on the government side as the result of regulatory compliance.

Nor, for that matter, will DOD and the services understand the true cost of program delays in terms of the man-hours expended. "I hear stories about the pricing exercises that folks are going through," Etherton said. "It's like, 'Well, if this delays the acquisition for a year or two years … just so we can get this lower price, you don't have anything to [measure the] price reduction against that effort.' I think there is a sense that the decision-making gets distorted a little bit by the lack of understanding of all those costs."

EFFECTIVE MANAGEMENT

Government program managers are often at a disadvantage against their industry counterparts, said Fox, a professor emeritus at Harvard Business School, a former assistant secretary of the Army for procurement, contracting and logistics, and a former deputy assistant secretary of the Air Force.

"If you take government program managers and they are dealing with dedicated and experienced corporate program managers on the industry side, I think very often the government people are outgunned," Fox said in an interview with Army AL&T in July.

The military's rotation of officers into and out of program manager roles every three to four years deserves a big chunk of the blame, Fox said. Currently there is no incentive for officers to stay in program manager positions. "They want to get back to the place where they stand a better chance of being promoted, and you can't blame them for that," Fox said. "They want to get back to their real job." Moreover, some officers and civilians are unprepared to deal with the complexities of managing a major defense acquisition program.

1969 Packard Initiatives

- Improve quality of information from development phase.
- Restore contractor competition to reduce risk.
- Establish milestone decision authorities.

1971 Fitzhugh Commission

- Called for more prototyping and testing: "Fly before you buy."

1972 - 1979 Congressional Commission on Government Procurement

- Called for fundamental improvements in the patchwork of federal procurement laws, directives and regulations.

LEADING THE CHARGE

Dr. Jacques Gansler, vice president emeritus at the University of Maryland and former USD(AT&L), discusses best collaborative practices and success stories during the Department of the Navy SBIR/STTR Primes Summit in December 2015 at the Office of Naval Research in Arlington, Virginia. Gansler, who led a landmark acquisition reform study in 2007, continues to decry the tangle of regulation governing defense acquisition, much of it implemented in response to unforeseen events. (U.S. Navy photo by John F. Williams)

"The Defense Acquisition University has made good progress in recent years improving the training of acquisition managers, but there is more work to be done," Fox said. "… There needs to more careful selection of program managers and other key managers to weed out those who have phobias for obtaining and working with quantitative data. … If an acquisition manager of a large engineering development program does not have a strong academic background in science, engineering, mathematics and possibly business administration, the manager is likely to be in over his or her head to begin with. Not everyone can be an effective manager of large engineering development programs."

Speaking June 16 at the third Army Innovation Summit in Williamsburg, Virginia, the Hon. Frank Kendall, undersecretary of defense for acquisition, technology and logistics (USD(AT&L)), said that engineers should be managing engineers, just as physicians should manage physicians and lawyers be in charge of lawyers. Unlike the other services, the Army has a real problem establishing this degree of expertise, Kendall said, with only one-third of Army engineering program managers having expertise in engineering.

"If you're supervising engineers, it's really helpful to have an engineering degree. … I think you guys need to take a look at that, [and] frankly, Katrina, I think you need to do better there. The other services do not have that situation.

"There is a world of difference—and I've seen this a hundred times, a thousand times—between a program that is led by somebody who understands the design and the issues related to the design and the risks and what's needed to address those risks, [and] somebody who doesn't. … Industry will always put a good face on things, and you've got to understand what's really going on," Kendall said. (For more on Kendall's views on acquisition reform, see "Think, Execute, Improve," Page 112.)

Creating effective program managers will require more than 15 or 20 weeks of

1976 Office of Management Budget Circular A-109

- Addressed acquisition reform and reducing cost overruns in executive branch agencies.

1981 Carlucci Initiatives

- Responded to 1980s horror headlines: $435 hammers, $640 toilet seats, $7,600 coffee makers.
- Recommended steps to improve and stabilize the weapons acquisition process.
- Increased use of multiyear funding to gain more efficient production rates.

1982 Nunn-McCurdy Act

- Designed to curtail cost growth in American weapon procurement programs.
- Increased oversight of programs exceeding baseline cost estimates by more than 15 percent.

FIXING TO ROLL OUT

The Army conducted a demonstration of its Rapid Vehicle Provisioning System in February at Fort Bliss, Texas, installing and configuring all of the vehicles of the 2nd Armored Brigade Combat Team, 1st Armored Division that are equipped with Warfighter Information Network – Tactical Increment 2 in preparation for Network Integration Evaluation (NIE) 16.2 in May. The Army is now modernizing the quick-reaction model it honed in OEF and OIF. (Photo by Amy Walker, Program Executive Office for Command, Control and Communications – Tactical Public Affairs)

training, Fox said. In addition to finding managers "who do not have an aversion to quantitative analysis and interpretation," Fox said, the training should include gaining a familiarity with the problems that arise between government and industry on major programs. "This means the acquisition workforce needs to understand, in depth, the industry forces that contribute to these problems and be skilled in working with their industry counterparts."

The only way to make acquisition careers more attractive to both military and civilians, Fox said, is to reward good performance. "I believe government acquisition managers need to be provided with significant rewards—such as cash and/or promotion opportunities—in response to outstanding performance in implementing acquisition reforms." That would send a message to the workforce that DOD is serious about reforms and would have a ripple effect that would compel others to learn how to implement and use more competition and should-cost program management, he said.

Congress, Etherton said, has explored the idea of a separate acquisition career path for military officers—creating a sort of special branch, like the Army's Medical Corps or Judge Advocate General's Corps—but quickly abandoned it because of the effects it would have on promotions and force structure.

Under the current promotion system, "You cannot have people staying too long in one place, or they essentially become

1985 Packard Commission

- Followed 131 separate investigations of DOD's top 45 contractors.
- Focused on defense management; evaluated DOD acquisition system, organizational decision-making and congressional oversight.

1986 Goldwater-Nichols Department of Defense Reorganization Act

- Reworked the military chain of command from the president through the secretary of defense directly to combatant commanders.
- Established the undersecretary of defense for acquisition, technology and logistics.

1989

OPERATION JUST CAUSE (Panama)

non-promotable to a higher level," Etherton said. "That conflicts in certain cases with some of the needs of the management of the acquisition process. Could I see us getting to that place at some point? It's a possibility, but we really haven't had much of a debate on that since the late 1980s."

INCENTIVES TO SUCCEED

No program can succeed without proper attention to the myriad decisions, large and small, that take a product or service from conception to delivery. Hence the Better Buying Power (BBP) initiatives. A central issue in acquisition reform is how to encourage smart decision-making at every echelon of program management, working within and in spite of the unwieldy acquisition bureaucracy and understanding what will induce industry to produce the best possible product or service at the best possible price.

A secondary issue is the degree to which these incentives need to be a matter of law, not just policy.

From the government's perspective, incentives to manage an acquisition program efficiently and economically take a number of familiar forms besides career advancement, including greater flexibility to reprogram monies saved by creating efficiencies; the ability to carry over such savings to a new fiscal year rather than "use it or lose it"; and more leeway to choose the particular contracting vehicle for a given program. Add to that list a new focus, on Capitol Hill and in the Pentagon, on creating incentives for early experimentation and prototyping to reduce the programmatic risk of relying on immature technologies, and a potentially powerful set of tools emerges to equip program managers to succeed.

Industry's incentives to succeed are quite different, and much simpler—shareholder value and, to an extent, profit—but at the same time more difficult to translate to government acquisition policy and procedures. In his experience, Etherton said, "Shareholder value is the overarching incentive," at least for publicly traded companies. "It's not necessarily profit on a specific contract," although, he added, "I see DOD looking at that as their shorthand for what incentivizes companies."

The government lacks a clear understanding of what constitutes shareholder value, Etherton believes. "I frankly think you really need to get some of the senior folks on both sides and put them in a room and say, 'We're going to talk about incentives and really try to get an understanding of that, and combine that with some of the analytic things' that measure performance on both sides of the table," he said.

"It's very difficult for the government folks to take more of an enterprise view of things," the former aerospace industry lobbyist added.

Rather, the program management professionals tend to consider themselves at the mercy of the federal budgeting process, not to mention uneven and erratic congressional appropriations. Even within the Pentagon, Etherton said, acquisition managers tend to have little interaction with the budget managers and no sense of influence in that arena.

For industry representatives seeking government business, however, there is a direct link between what they do and their companies' financial situation: "You're either making money or you're not making money. It's a fairly simple thing to start with. Then you build your process and see what feeds into that … that, again, is sort of a more complex concept of shareholder value," Etherton said.

Reducing this gap in understanding, to some degree, are DOD acquisition leaders with extensive experience in industry, Etherton added, such as Kendall, USD(AT&L) since 2012, and Shay D. Assad, director of defense pricing since 2011 and Kendall's principal adviser, particularly on all program-related contract negotiation matters.

1989 Secretary of Defense Management Review

- Presidential directive to DOD to improve the procurement process and management.
- Recommended fully implementing the Packard Commission recommendations.

1989 Army Acquisition Corps established

1989 Berlin Wall falls

(Photo courtesy of History Channel via Encyclopedia Britannica)

"The necessity of getting better technology into the hands of the warfighter faster seems to me to be an imperative."

Kendall, for example, is a former vice president of engineering for Raytheon Co. and, more recently, a managing partner at Renaissance Strategic Advisors, a Virginia-based aerospace and defense sector consulting firm. Assad worked for Raytheon from 1978 to 2000, when he retired from the company as the chairman and CEO of its engineering and construction business.

Etherton is not optimistic that defense acquisition and fiscal managers can reach a better understanding of each others' incentives and motivations, but he views that as critical to effective acquisition reform. "I think until we start doing that, whatever transformation reform, whatever your target is, we're just not going to get there. Those will be very difficult conversations involving lots of stakeholders in the government with vested interest and experience. … People have told me over and over again, when I talk to government folks, that's never going to happen. Maybe not, but I would hope that we would at least tend to move in that direction and see how far we can get," he said, with the next step being to widen the circle of discussion to include the White House Office of Management and Budget and the congressional appropriations committees.

Fox believes that incentives, rather than processes, must change if acquisition reform is to succeed, and he sees several opportunities for improvement. "First, DOD can negotiate contractor profits more often as return on investment rather than as return on sales, reducing an incentive for cost growth. Second, program managers and contracting officers need more training and 'practice' in dealing with typical challenges and problems that occur regularly on large engineering development and production programs."

Finally, Fox told Army AL&T, "government acquisition managers need to be provided with significant rewards," namely cash, promotion opportunities or both, to recognize outstanding performance in implementing acquisition reforms.

"If those practices are adopted, the news would travel quickly throughout the acquisition workforce. That would mean the USD(AT&L) is very serious about this. More members of the acquisition workforce would say, 'I better find out how to implement and use more competition, 'earned value' and 'should cost.' Simply applying modest effort to achieve these objectives is not sufficient," Fox said.

A BETTER BUREAUCRACY

Whatever their incentives to deliver exemplary products and services to the warfighter and be model stewards of taxpayers' money, the acquisition workforces throughout DOD still add up to something called bureaucracy.

An overriding issue—and a contentious one, in current acquisition reform efforts—is the shape of the overall bureaucracy as much as its size: Who will have a hand in developing new programs? Who will have the final say in whether a program flies or dies? Who will have special authority, and how much of it, for rapid acquisition? Determining the optimal balance of authority involves not just OSD and the individual services, but also the service chiefs and the Joint Chiefs of Staff, the technical

1990-1991
OPERATIONS DESERT SHIELD AND DESERT STORM

1992 Defense Acquisition University founded

1993 National Performance Review

- Vice President Al Gore promotes using commercial standards for acquisition programs.

thinkers as contrasted with the management thinkers, and the rapid and traditional acquisition cadres.

Congress took a first step in reshaping the defense acquisition bureaucracy last year with provisions in the FY16 NDAA, which increased the individual services' program approval authority. Specifically, each service's acquisition executive would gain milestone decision authority (MDA) for major defense acquisition programs unless the secretary of defense made an exception. The USD(AT&L) already had the discretion to delegate this authority to the services and did so frequently, along with delegating MDA for smaller acquisition programs to the service acquisition executives.

Also in the FY16 legislation, the service chiefs took on a bigger role in acquisition, with a requirement that the MDA consider the appropriate chief's views on the program's cost, schedule, technical feasibility and performance trade-offs.

While not without critics who see just more bureaucracy, these changes are baby steps compared with what the NDAA for FY17 could do to DOD's acquisition chain of authority—assuming the House and Senate agree and the president signs the final legislation. The House version of the bill, spearheaded by Thornberry, hews relatively closely to the status quo, whereas McCain is pushing hard for major changes at the heart of the decision-making process: the Office of the USD(AT&L).

The Senate-passed bill called for dividing the office into two undersecretaries: one for management and support, focusing on business operations, and the other for research and engineering, focusing on technology and innovation and harking back to 1986, when the USD(AT&L) replaced the undersecretary for research and engineering. The revived position would have an assistant secretary to set DOD-wide acquisition and industrial

WHERE TO NEXT?

Program officials conduct preflight system checks on reconnaissance drones at NIE 16.1 at Fort Bliss in September 2015. A review of acquisition reform studies over the past decades reveals consensus on the importance of getting new technologies like drones into the hands of warfighters faster and cheaper, but suggests a wide range of approaches on how to best accomplish that goal. (Photo by John Hamilton, White Sands Missile Range Public Affairs)

1994 Secretary of Defense William J. Perry's 'Acquisition Reform: A Mandate for Change'

- Addressed shrinking industrial base.
- Emphasized use of commercial technologies when appropriate, reducing military specification except as necessary.
- Cautioned that commercial technologies were outpacing DOD.

1996 Clinger-Cohen Act

- Provided guidance to ensure a fair and open competitive process for procurement of contractor support.
- Gave contracting officers more discretion when making competitive range determinations.
- Permitted simplified acquisition procedures in procuring commercial items valued at up to $5 million.

BOOTS ON THE GROUND

Former Secretary of Defense Donald Rumsfeld tours the Transit Center at Manas, Kyrgyzstan, in June 2013, accompanied by Col. Shirlene Ostrov, then the 376th Expeditionary Mission Support Group commander, and Lt. Col. Tom Doan, then the 376th Expeditionary Logistics Readiness Squadron commander. Acquisition reforms unveiled under his second term as secretary of defense—2001 to 2006—focused on transformational technologies. (U.S. Air Force photo by Tech. Sgt. Krystie Martinez)

base policy and oversee weapons development. This restructuring of Kendall's office would erase the current seven assistant secretaries and deputy assistant secretaries from the organization.

McCain touts the re-establishment of an undersecretary for research and engineering as a strong move toward greater innovation in acquisition at a time when innovative thinking is vital to the country's military success against the diversity of enemy threats, known and unknown. He's seeking to build on Goldwater-Nichols, not undo it, he has said. During the June 8 opening Senate floor debate on the NDAA for FY17, McCain said, "Put simply, Goldwater-Nichols was about operational effectiveness—improving the ability of the military services to plan and operate together as one joint force. The problem today is strategic integration—how the Department of Defense integrates its activities and resources across different regions, functions and domains, while balancing and sustaining those efforts over time."

To maintain central oversight of the services' acquisition activities in the spirit of Goldwater-Nichols, the Senate bill looks to OSD's Director, Operational Test and Evaluation and its Office of Cost Assessment and Program Evaluation.

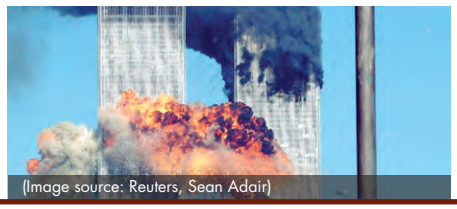
From at least one project manager's perspective, Congress is missing the mark in attempting to streamline the acquisition bureaucracy. In his opinion, milestone decision authority should rest with the program executive officer (PEO), said Dr. Robert F. Mortlock, a retired Army colonel who managed defense systems development and acquisition efforts for the last 15 of his 27 years in the Army,

2000 'Road Ahead' Report from USD (Gansler)

- USD's vision of future acquisition and logistics environment.
- Outlined initiatives underway to accelerate DOD's progress toward achieving that vision.

2001

9/11 ATTACKS AT WORLD TRADE CENTER AND PENTAGON



(Image source: Reuters, Sean Adair)

2001

OPERATION ENDURING FREEDOM BEGINS IN AFGHANISTAN

"You cannot have people staying too long in one place, or they essentially become non-promotable to a higher level. That conflicts in certain cases with some of the needs of the management of the acquisition process."

most recently as the project manager (PM) for Soldier protection and individual equipment under PEO Soldier. Mortlock retired in September 2015 and is now a lecturer for defense acquisition and program management at the Graduate School of Business and Public Policy at the Naval Postgraduate School.

"PEOs are trained, educated, certified members of the acquisition profession. They have decades of operational management experience and training in leading program offices, and they possess the necessary technical and business acumen, as well as the mandated acquisition certifications required of members of the acquisition profession," Mortlock wrote in a commentary for this issue of Army AL&T. (See "Been There, Done That," Page 120.)

If PEOs had milestone decision authority for acquisition programs, DOD could make optimal use of OSD and service acquisition staffs by giving them exclusively oversight roles, Mortlock wrote, stating that "it would empower the right folks and simplify the PM chain of command, applying a key principle of war—simplicity—to defense acquisition."

SETTING A 'RAPID' PACE

In its "Pathway to Transformation," NDIA laid out the conflict between traditional defense acquisition and modern-day needs for new battlefield capabilities, citing:

- Overly complex acquisition laws and regulations and their enforcement bureaucracy, which together create unclear lines of authority and accountability in program management.
- Micromanagement in response to perceived failures in the acquisition system, with ever-increasing process compliance and reporting requirements.

The solution, NDIA stated, would not require a wholesale reform of defense acquisition to more closely resemble rapid acquisition authorities. Nor, the report concluded, would the creation of rapid acquisition authorities necessarily become a device to circumvent the traditional acquisition system. "For our part, NDIA does not believe there is a 'one size fits all' approach that will uniformly deliver the best acquisition outcomes. Different kinds of acquisition programs require different kinds of tools, authorities, and oversight to ensure integrity in the process." The organization called for DOD to create new tools for rapid acquisition.

A year later, the NDAA for FY16 helped set the pace for DOD to pursue more aggressively several new acquisition processes, not entirely separate but distinctly unequal from the traditional acquisition system, to explore and mature promising technologies before they become part of a program of record, and the momentum continues.

The legislation, Public Law No: 114-92, established several avenues to faster procurement:

- Rapid acquisition authority, enabling a contracting officer to purchase items to rectify a document deficiency that could result in a cyberattack or other life-threatening situation.

2001 Rumsfeld challenge from President Bush

- Review the nation's defense strategy.
- Examine and reassess the number of offensive nuclear weapons.
- Encourage a culture of creativity and intelligent risk-taking in DOD.

2003-2010

OPERATION IRAQI FREEDOM

(Image source: Wikimedia commons, U.S. Army)

2005 'Reexamining Military Acquisition Reform' – RAND Corp. study

- "Are we there yet?" Focused on past acquisition reform efforts.

TWO STEPS BACK?

Maj. Gen. Thomas A. Horlander, director of the Army budget, outlines the Army's FY17 budget during a briefing at the Pentagon, Feb. 9. Some experts are concerned that the Senate version of the FY17 NDAA would bring back interservice rivalries and cost and schedule overruns largely eliminated by the Goldwater-Nichols regulations. (Army Photo by C. Todd Lopez, U.S. Army News Service)

- Mid-tier acquisition programs, authorizing rapid prototyping and rapid fielding.
- Alternative acquisition pathways, to acquire capital assets and services that meet critical national security needs.
- Pilot Program for Streamlining Awards for Innovative Technology Projects, geared toward information technology in particular and to contracts, subcontracts and modifications valued at less than $7.5 million and awarded to a small business or nontraditional defense contractor.

In separate initiatives to spur defense innovation, Secretary of Defense Ash Carter has created the Defense Innovation Unit Experimental and the Strategic Capabilities Office to strengthen the U.S. technological edge. Recognizing that these are new areas of exploration for DOD, Carter continues to evaluate and modify the design and function of these organizations.

The Army is now modernizing the improvisational quick-reaction model that worked in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF), making it a permanent part of the acquisition system in the form of the new Army Rapid Capabilities Office. (See "Seizing the Advantage," Page 30.) This new rapid-response entity takes lessons learned from similar efforts in the Air Force, quick reaction capabilities and the prototypes-turned-programs of OEF and OIF; exercises like the Network Integration Evaluation; and specialized entities such as the Joint Improvised-Threat Defeat Agency, the Army Rapid Equipping Force and the U.S. Army Special Operations Command.

The Army Rapid Capabilities Office aims to go beyond closing current capability gaps to stimulate aggressive, proactive capability development and leverage

2007 Gansler Commission report on Army expeditionary contracting

- Findings: not enough people, insufficient training and antiquated contracting system.

2009 Weapon Systems Acquisition Reform Act

- Reformed the way the Pentagon contracts for and purchases major weapon systems.
- Appointed directors of cost assessment and program evaluation, developmental test and evaluation, and systems engineering.

2010 USD(AT&L) releases Better Buying Power initiative

- Implemented best practices to strengthen DOD's buying power, improve industry productivity and provide an affordable, value-added military capability to the warfighter.

disruptive technologies that force our adversaries to respond to us, in line with DOD's Third Offset Strategy to establish U.S. military overmatch in a volatile, unpredictable world.

CONCLUSION

Clearly there is no perfect solution to the perennial problems of acquisition cost overruns, bureaucratic overreach and predictable obsolescence. In the near term, much depends on whether and how the Thornberry and McCain camps resolve their considerable differences over the next NDAA. Longer term, beyond the complex universe of possible defense acquisition reforms, are, of course, forces beyond the control of anything that acquisition reforms can affect directly.

NDIA's November 2014 "Pathway to Transformation" posed the concept of "boundary conditions," i.e., factors outside of the DOD acquisition system that are uniquely resistant to change, including the federal military and civilian personnel systems and DOD's budgeting and program planning processes. They still stand firmly in the way of acquisition reform, Etherton said.

"So I think we've got to figure out a way to get a different conversation where you say, look, we can change the workforce or we can deal with promotions and we can deal with education. We can deal with different contract types and some of these things. But until we start talking about the impact of some of these bigger issues on the process, we're going to be in this equilibrium that we've been in. Things are just going to slide back. We're not really going to fundamentally change the process that we have. That's my belief."

Mortlock took a similar view but cited slightly different variables that he thinks Congress and DOD must reconcile to make acquisition reform work. The reason that decades of initiatives for change have fallen short of making a real difference, he believes, is that they have failed to address requirements, funding and acquisition reform with equal vigor. "Real reform will only come when the service chiefs exercise control and oversight of requirements and funding, and layers of bureaucracy and oversight are eliminated from the third leg, the defense acquisition management system described in the DOD 5000 series regulations," he stated.

But the threats facing the U.S. across the globe—their diversity and urgency—are powerful motivators to make defense acquisition work better, faster and sooner rather than later. As with the acquisition of urgently needed new capabilities, it is also true of acquisition reform: Timing is everything.

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2014 'Defense Acquisition Reform: Where Do We Go From Here?' — Senate committee report

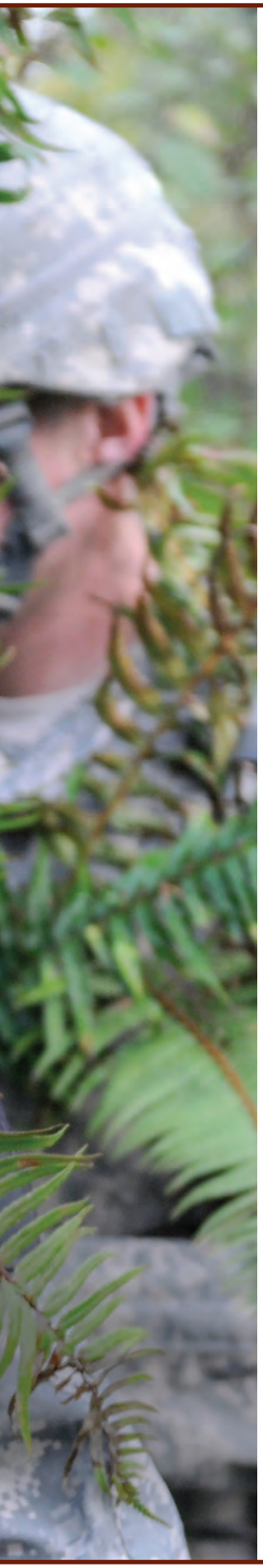
Compendium of leading experts' views on:

- Incentivizing the acquisition workforce.
- Attracting and training a qualified acquisition workforce.
- Realism in program requirements and budgets.
- The role of the service chiefs in the acquisition process.

2015 National Defense Authorization Act for Fiscal Year 2016

- Included comprehensive defense acquisition reform.
- Made permanent the Defense Acquisition Workforce Development Fund.

THE BEST CAPABILITIES FOR THE FIGHT
Spc. Spencer Secord, right, an intelligence analyst with the 2nd Infantry Division (ID), helps camouflage Sgt. Alfredo Munoz-Lopez, a cryptologic linguist, during a cyber-training exercise at Joint Base Lewis-McChord, Washington, in October 2015. Cyber, electronic warfare, survivability and PNT are critical technology focus areas for the new Army Rapid Capabilities Office. (U.S. Army photo by Capt. Meredith Mathis, 2nd Stryker Brigade Combat Team, 2nd ID)



SEIZING THE ADVANTAGE

Building on lessons from OIF and OEF and taking a page from an Air Force playbook, the Army is creating a Rapid Capabilities Office to address new threats.

by Mr. Douglas K. Wiltsie and Maj. Gen. Walter E. Piatt

They came in a trickle, and then in a flood: operational needs statements from troops on the ground in Iraq and Afghanistan, asking for new equipment to adapt to the changing fight.

The Army stepped up to the plate, delivering a slew of quick reaction capabilities that improved lethality and survivability. From the Joint Network Node – Network and the Mine Resistant Ambush Protected Vehicle to a multitude of systems for force protection and intelligence, surveillance and reconnaissance, the new gear ran the gamut of the Army's weapon system portfolio—but mostly avoided the life cycle management process.

Instead, experts in the operations, acquisition, research and doctrine communities took state-of-the-art commercial and military technology, quickly adapted and prototyped it for the Army's needs, determined it was good enough, procured it fast and sent it to the fight. Commanders in Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) got the capabilities they needed, and their feedback helped improve the systems, several of which the Army later incorporated into programs of record and fielded across the force.

Fast forward to today, as the Army battles to maintain technological superiority against sophisticated competitors such as Russia, China, North Korea and Iran. Acting in cyberspace and on the ground in places like Ukraine, these and other potential adversaries have demonstrated vulnerabilities in U.S. systems that put

SCOPING OUT SOLUTIONS
Sgt. Jacob Butcher, a squad leader in the 1st Infantry Division (ID), troubleshoots a system during an electronic warfare certification course at Fort Riley, Kansas, in September 2015. The Rapid Capabilities Office will incorporate early and prominent warfighter involvement into the requirements gathering and prototyping process. (U.S. Army photo by Staff Sgt. Tamika Dillard, 2nd Brigade Combat Team, 1st ID Public Affairs)

our troops at risk. The Army recognizes that these threats are evolving faster than our challenging acquisition processes, complex bureaucracies and large organizations can support.

To reduce that risk, the Army is now modernizing the improvisational quick reaction model that worked for Iraq and Afghanistan and making the model a permanent and institutionalized part of our acquisition system that considers life cycle trades. Beyond closing current capability gaps, this initiative also will stimulate aggressive, proactive capability development and leverage disruptive technologies that force our adversaries to respond to us—not the other way around.

That is the purpose of the new Army Rapid Capabilities Office, which recently launched under the direction of Secretary of the Army Eric Fanning, Chief of Staff of the Army Gen. Mark A. Milley and Assistant Secretary of Defense for Acquisition Performing the Duties of the Assistant Secretary of the Army for Acquisition, Logistics and Technology the Hon. Katrina McFarland. A critical piece of acquisition reform efforts, the Rapid Capabilities Office gives the Army an organization specifically dedicated to expediting the acquisition of select capabilities that will meet emerging operational needs and achieve future strategic objectives.

LOOKING TO THE HORIZON

The Army Rapid Capabilities Office arrives in a volatile, unpredictable global security environment. As senior DOD and Army leaders have stressed, the U.S. military's long-held technological edge is eroding as our adversaries look to exploit our weaknesses and counter our overmatch. DOD's Third Offset Strategy seeks to retake and retain that technological advantage so that our nation maintains and enhances its ability to project force and deter enemy activity around the world. In a budget-constrained environment, the third offset emphasizes smart and innovative investments in capabilities that sustain and advance America's military dominance for the 21st century.

Against this backdrop, the Rapid Capabilities Office has a critical role to play in ensuring that the Army is ready today and prepared for tomorrow. Acting as both planner and accelerator, the organization will aim to address current and future Army needs across the tactical, operational and strategic spectrums. Although flexible in its capability, the Rapid Capabilities Office will focus primarily on the highest-priority Army requirements with the intent to deliver an operational effect within one to five years. It will help Soldiers in the field today while building an advantage for those who will follow in their footsteps.

To that end, the organization will provide expertise not solely focused on materiel; it seeks to provide holistic

Experts in the operations, acquisition, research and doctrine communities took state-of-the-art commercial and military technology, quickly adapted and prototyped it for the Army's needs, determined it was good enough, procured it fast and sent it to the fight.

SEEKING SUPERIORITY
Allied forces operate during the exercise Anakonda 16 in June in the Drawsko Pomorskie Training Area near Oleszno, Poland. As the Army battles to maintain technological superiority against sophisticated adversaries, the Rapid Capabilities Office will focus on the highest-priority Army requirements with an intent to deliver an operational effect within one to five years. (U.S. Army photo by Sgt. Ashley Marble, 55th Combat Camera)

solutions that inform the doctrine, organization, training, materiel, leadership, personnel, facilities and policy impacts of implementing new capabilities within the operational Army. Rapid Capabilities Office solutions will be user-driven, leverage military and commercial innovation, and deliver capabilities that aren't perfect but are game-changing nonetheless. Additionally, the organization will act as an agent of change within the total force acquisition system by challenging traditional approaches and implementing streamlined methods, processes and techniques.

THE RAPID MODEL

The Army is not the first service to stand up a dedicated rapid prototyping and fielding office for strategic gain. The idea comes from the U.S. Air Force, which created its own Rapid Capabilities Office in 2003 when it became clear that existing acquisition processes could not speed critical technologies to production to counter asymmetric threats. The new office was to be lean, secretive and empowered, with a direct line to the service secretary and chief of staff.

In establishing its rapid capabilities organization and operating principles, the Air Force didn't have to start from scratch. Several major defense contractors, most famously Lockheed Martin Corp. and its secretive rapid capabilities branch, provided a precedent for shedding traditional bureaucracy and getting state-of-the-art systems out the door fast. Keys to the vendors' success included a short, narrow chain of command; a small, motivated engineering and test team; autonomy and central decision-making authority; and acceptance of an "80 percent" solution to outfox the enemy rather than answer every detail of a requirement.

The Air Force Rapid Capabilities Office succeeded in developing and fielding rapid prototypes, including an integrated air defense system for the National Capital Region that combined tower-mounted radars, aircraft identification and visual warning systems. Making use of commercial technology and agile testing, the project was completed in less than two years and operational in time for the 2005 U.S. presidential inauguration. As the organization matured, the Air Force Rapid Capabilities Office also began to manage larger, highly classified projects such as the Long Range Strike Bomber program without abandoning the mentality that made it effective.

ARMY RAPID CAPABILITIES OFFICE TAKES SHAPE

The Air Force experience has proved valuable to the Army in shaping its Army Rapid Capabilities Office over the past several months. For example, like its Air Force counterpart, the Army Rapid

Capabilities Office reports to a board of directors led by the secretary of the Army and including the chief of staff and the Army acquisition executive. The board directs the Army Rapid Capabilities Office to explore materiel solutions based on identified threats, capability gaps and technology opportunities, triggering prototyping efforts.

All decision-making authority related to the organization's projects will flow from the board of directors to the Rapid Capabilities Office, including addressing requirements refinement, acquisition tailoring, contracting execution, testing and potential limited fielding decisions. This streamlined structure is essential for the organization to meet its rapid acquisition mandate and maintain a competitive edge.

The Army is also following the Air Force example by incorporating early and prominent warfighter involvement into the prototyping process, to ensure that materiel solutions are not only vetted by operators but also delivered to units as a holistic capability with the right support and tactics, techniques and procedures in place. In addition to having an operational community presence on its staff and providing matrix support, the Army Rapid Capabilities Office will work with receiving units or their representatives to confirm prototypes' utility to Soldiers and to expedite the test and evaluation process.

However, the Army Rapid Capabilities Office departs from the Air Force model in several ways to meet the Army's distinct needs. Though technically an acquisition organization, the Rapid Capabilities Office is a total Army effort that will leverage capabilities and expertise from across the service, especially the Army staff, program executive offices (PEOs), the training and doctrine community, intelligence community and science and technology community. The Army Rapid Capabilities Office's initial technology focus will be on the areas of cyber, electronic warfare, survivability, and positioning, navigation and timing (PNT). These capabilities—in high demand to meet current and future threats—are also cross-cutting, meaning that they affect and integrate with systems across different program portfolios. The classification levels of rapid capability projects will vary based on need, but keeping details out of adversaries' hands will be paramount.

Operating in stealth should not be mistaken for operating in a vacuum. While the office's institutional prominence and authorities are new, the concept of rapid acquisition is not. In addition to mirroring the Air Force organization, the Army Rapid Capabilities Office is incorporating lessons learned through other rapid acquisition efforts. These include the quick reaction capabilities and the prototypes-turned-programs form OIF and OEF; exercises like the Network Integration Evaluation; and specialized entities such as the Joint Improvised-Threat Defeat Agency, the U.S. Army Rapid Equipping Force (REF) and the U.S. Army Special Operations Command.

THE 'SWEET SPOT'

Another thing that makes the Army Rapid Capabilities Office unique is its focus on projects with a one- to five-year horizon for completion. This mission is complementary to programs of record that aim deeper into the future, as well as to the REF, which has a 180-day turnaround time. While a REF project delivers a specific piece of kit to meet the urgent operational needs of a specific forward-deployed unit, the Army Rapid Capabilities Office will provide more units with broader capability solutions, such as a family of PNT or electronic warfare technologies that deliver a combined operational effect.

Aiming for the one- to five-year "sweet spot" allows the Army Rapid Capabilities Office to concentrate on leap-ahead prototypes that will have immediate or near-term operational relevance for our

A HIGH PRIORITY
Secretary of the Army Eric Fanning speaks at a DOD ceremony June 20 at Joint Base Myer-Henderson Hall, Virginia, welcoming him to Washington. Fanning made creating the Army Rapid Capabilities Office one of his top priorities. (Photo by U.S. Navy Petty Officer 1st Class Tim D. Godbee, Office of the Secretary of Defense Public Affairs)

COMPLEMENTARY CAPABILITIES
Joseph Amadee, REF operational lead, configures power settings for a hybrid battery system that greatly reduces fuel consumption of the Rapid Aerostat Initial Deployment tower in Kabul, Afghanistan, in September 2014. The Army Rapid Capabilities Office's mission is complementary to that of the REF, which has a 180-day turnaround time and delivers a specific piece of kit to meet the urgent operational needs of a specific forward-deployed unit. (U.S. Army photo by Sgt. William White, International Security Assistance Force Joint Command)

forces operating in contested environments, as well as projects with potential to meet future strategic objectives and fill gaps. As disruptive technologies emerge in the commercial and military sectors, the organization will provide a streamlined path for the Army to adapt, acquire and field critical capabilities.

At the same time, the organization will enable the Army to match and outpace future adversaries by promoting innovation, experimentation and risk-taking earlier in the technology life cycle.

While each project will have a different time frame for investigation and completion, the process can be tailored to allow the Army to respond to current contingencies. Ordinarily, enduring capabilities resulting from the Army Rapid Capabilities Office's efforts will transition to a PEO for continued production, modification, sustainment and support.

These limits on scope illustrate that the Army Rapid Capabilities Office is not a substitute for the acquisition practice. Its goal is not to procure systems to outfit the entire Army, but rather to use targeted investments to execute strategic prototyping, concept evaluation and limited equipping—especially in areas where technology progresses rapidly.

This approach is consistent with congressional emphasis and DOD Better Buying Power efforts on prototyping as a means of acquisition reform. In the National Defense Authorization Act for Fiscal Year 2016, which became law in November 2015, lawmakers described a middle tier of acquisition to support rapid prototyping and fielding projects. The law laid out new pathways for such projects that remove various process, funding and regulatory hurdles to streamline capability delivery. As one component of the Army's larger acquisition reform efforts, the Rapid Capabilities Office, like its Air Force counterpart and a similar office recently created by the Navy, can take advantage of this foundation to further expedite solutions to the field.

CONCLUSION

Just as it is impossible to predict exactly what the Army's next conflict will be, we can't always foresee the necessary battlefield technologies until the moment of need, as Soldiers discovered in Iraq and Afghanistan. By creating a dedicated organization to proactively expedite critical combat capabilities, we will send fewer shorthanded troops to today's and tomorrow's fights. If we work hard and get it right, the Rapid Capabilities Office will enable the Army to address evolving threats and build our nation's technological advantage through rapid procurement of innovative technologies that change the equation for our Soldiers.

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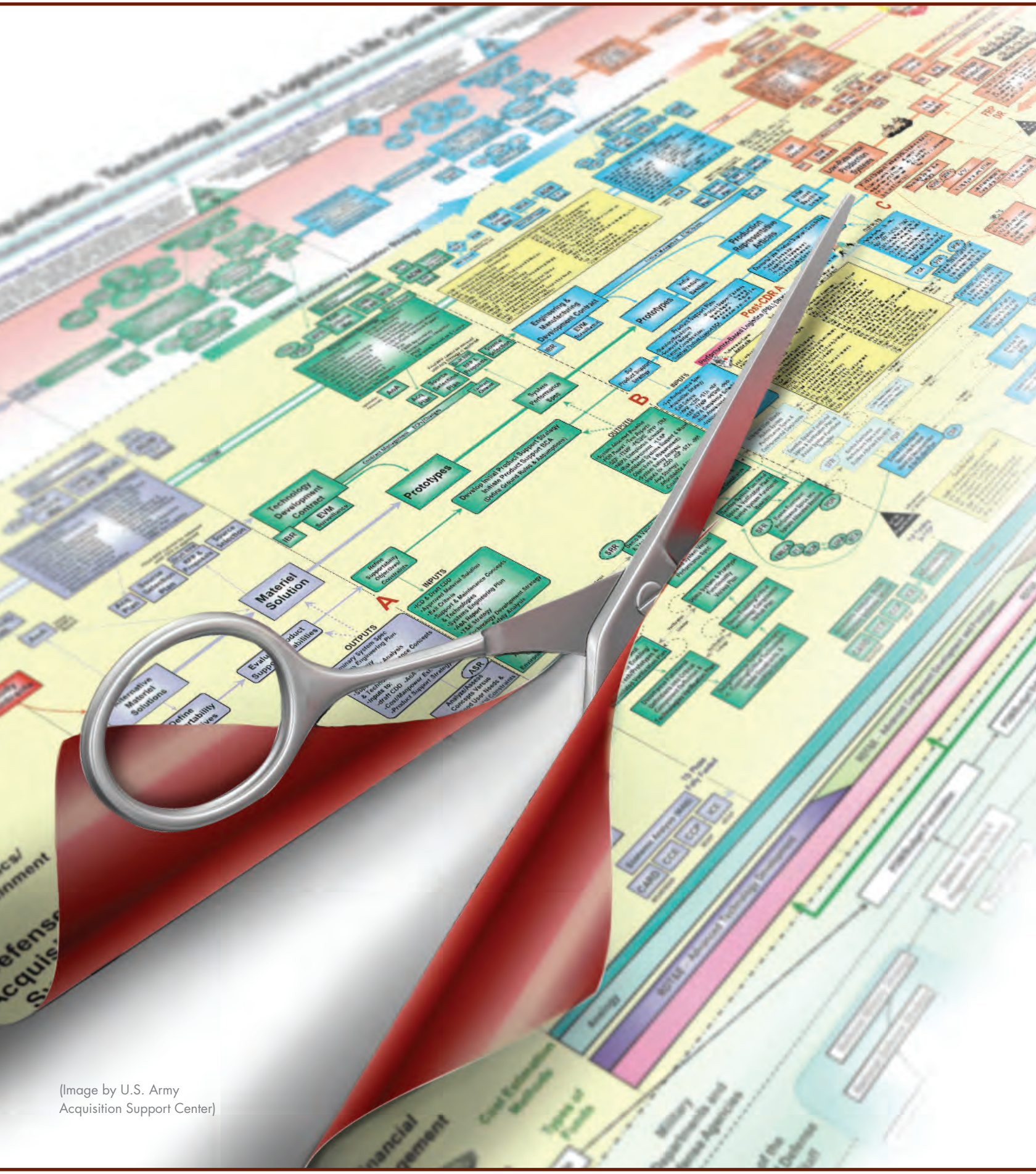


(Image by U.S. Army Acquisition Support Center)

GROUND TRUTH

Piggybacks and workarounds: The Acquisition Lessons Learned Portal contains a wealth of information on new ways to use existing processes to get weapons to warfighters in less time.

by Ms. Amanda Nappi

The acquisition process can be a long and laborious journey for acquisition personnel and stakeholders involved in the development of a weapon system. With a plethora of required documentation, milestone requirements and validations needed from oversight councils, bureaucracy is slowing our ability to rapidly provide the warfighter with innovative weapon solutions. In addition to slowing our support to the warfighter, the lengthy process is costly to taxpayers and could cause our country to be overtaken by a more technologically advanced adversary. It is no wonder that Congress is looking for acquisition reform. The need for a faster, more streamlined acquisition process is clear.

The Army Acquisition Lessons Learned Portal (ALLP) is an online knowledge management tool that promotes the streamlining of acquisition by sharing lessons learned and best practices. While it is no substitute for truly streamlined processes and procedures, it is a place where those in acquisition can learn how to do things better and more efficiently. The following lessons from the ALLP share valuable experiences and advice from acquisition personnel on speeding up weapon system development and streamlining acquisition processes to more rapidly field weapon systems.

SPEEDING WEAPONS DEVELOPMENT

LL_763: Possibly shorten the time it takes to validate requirements by "piggybacking" onto unfulfilled, currently validated requirements and proposing a technology insertion of your program to fulfill those unmet requirements.

Background

The Command Post of the Future (CPOF) is a virtual command post where participants can see a common picture of the battlefield and scheme of maneuver, and exchange information in real time from dispersed locations.

The CPOF concept and technology were developed by the Defense Advanced Research Projects Agency, but needed to be transitioned to a military service. The Army was preparing for deployment to Iraq at the time, and there was a critical operational need for the collaboration capability because of the growing threat from improvised explosive devices. Under the traditional DOD acquisition process, it generally takes two years to validate requirements. The CPOF transition team identified an approach that would substantially shorten the two-year timeline to meet the Army's urgent need: piggybacking onto existing requirements.

The transition team searched existing information technology (IT) requirements within the U.S. Army Training and Doctrine Command database to find unfulfilled but validated requirements that the CPOF system could satisfy. The team found six or seven suitable requirements, including one for collaboration in the Maneuver Control System (MCS), a network of computer workstations that form the command-and-control system for Army maneuver elements in battalion through corps echelons. In January 2006, the team was able to justify adding CPOF as a technology insertion into the MCS program because of the program's unfulfilled collaboration requirement.

Recommendation

Identify candidate requirements and programs by searching existing, unmet requirements and selecting a best fit. It may be better to select requirements associated with programs that may pass Milestone C before your program fully transitions, to simplify completion of paperwork, meetings and other acquisition requirements.

GETTING THE TOOLS TO THE TROOPS

Sgt. Jon Findley, right, of the 311th Sustainment Command (Expeditionary) (311th ESC), tells Pfc. Arturo Gonzalez how to brief the enemy situation using the CPOF computer system during the 311th ESC Command Post Exercise – Functional at Camp Parks, California, in September 2015. When seeking an approach that would substantially shorten the timeline to get the CPOF fielded, the transition team piggybacked onto existing requirements. (Photo by Lt. Col. Gregg Moore, 311th ESC Public Affairs)

LL_770: Consider fielding a capability without full-scale initial operational test and evaluation (IOT&E) and the Beyond Low-Rate Initial Production (LRIP) Report, instead satisfying the need for operational testing by using the "as soon as practicable" provision in the Joint Network Node law.

Background

The Joint Network Node – Network (JNN-N) is considered a successful rapid acquisition. Less than a year after the submission of an operational needs statement in 2004, the program delivered greatly enhanced beyond-line-of-sight communication capabilities to the warfighter. Furthermore, JNN was fielded to almost the entire Army within five years.

The rapid acquisition of JNN-N overcame a number of challenges, including the perceived avoidance or postponement of testing requirements by DOD's Director

NETWORK NECESSITY
Spc. Brandon McClure, left, and Sgt. Michael Remaly of the 2nd Infantry Brigade Combat Team, 3rd Infantry Division (2-3 IBCT) perform preventive maintenance checks and services in February on a Satellite Transportable Terminal (STT) at Fort Stewart, Georgia. The STT is a mobile satellite system that operates in conjunction with Joint Network Node - Network, which was fielded after operational test and evaluation but without initial operational test and evaluation or a Beyond LRIP Report. (U.S. Army photo by Spc. Nicholas Holmes, 2-3 IBCT Public Affairs)

of Operational Test and Evaluation. The Army had allocated funds and bought equipment without completing testing. However, since JNN was not a program of record, DOD officials disagreed over whether JNN would fall under DOD Instruction (DODI) 5000.02 processes. Because of the rapid acquisition practices in the JNN-N program, Congress included provisions, now known as the JNN Law, in the National Defense Authorization Act for Fiscal Year 2007 that require operational test and evaluation (OT&E) before fielding. However, this law does not prevent fielding without IOT&E and a Beyond LRIP Report. It requires only that a Beyond LRIP Report be provided "as soon as practicable."

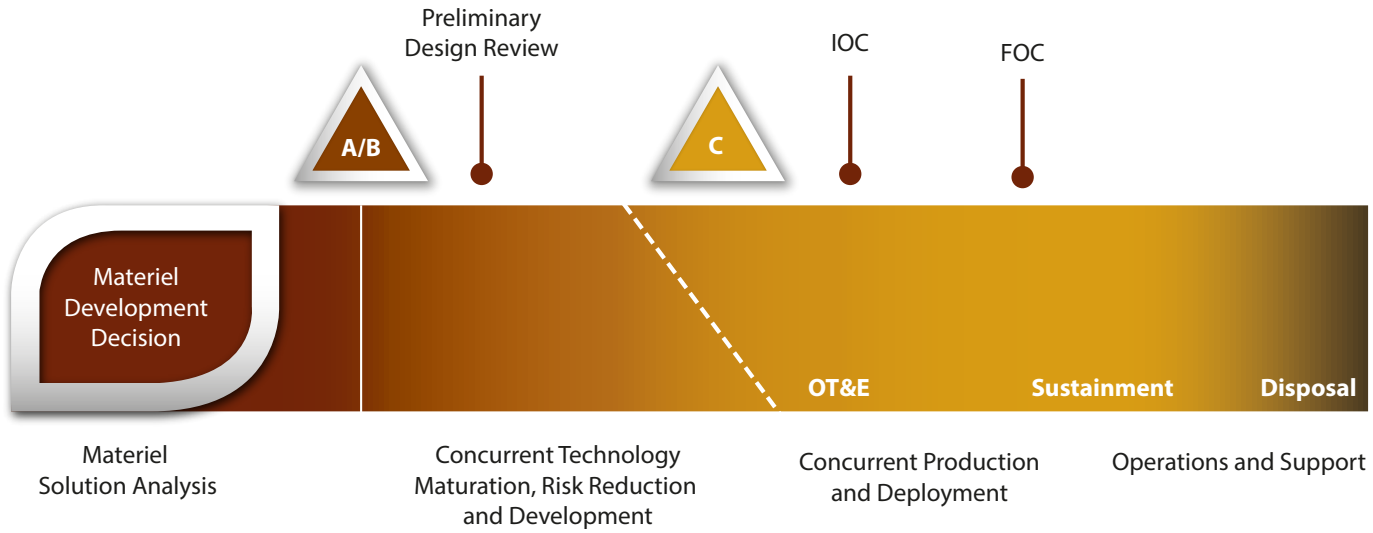
The reduced testing would result in increased program risks of uncertain nature, which program managers would have to balance against the risks posed by not delivering the capability in a timely manner. Operational demonstration of effectiveness is currently not credited toward official testing requirements, but it may provide an opportunity to satisfy the law's official testing requirement while reducing testing efforts.

Recommendation
To satisfy the valid need for operational testing without performing full-scale OT&E, acquire equipment on a small scale at first and field equipment on a trial basis, enabling users to provide direct and rapid feedback to developers on equipment performance and other issues. This operational testing approach is also more consistent with the use of commercial and government off-the-shelf equipment, the subsystems of which are already mature and largely understood, and the importance of user feedback in setting requirements for software and IT-heavy systems.

LL_138: Use other services' contracts when feasible and when an accelerated schedule does not allow for long contract development times.

Background
Team Coalition Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C5ISR) used numerous methods to procure equipment; however, accelerated deployment timelines made it difficult for the team to execute contract actions in a timely matter. Ideally, an omnibus contract would satisfy most needs, but development of such a contract requires time that is often unavailable for a quick reaction capability. Team C5ISR, which included personnel from the Program Executive Office for Command, Control and Communications – Tactical (PEO C3T) and the PEO for Intelligence, Electronic Warfare and Sensors, reached out to the Navy for several of its materiel procurements. The Navy contracting office became a critical partner, executing materiel procurements on several omnibus contracts to meet the deployment timelines.

FIGURE 1



KEY

Decision Point

Milestone Decision

IOC: Initial operational capability

OT&E: Operational test and evaluation

FOC: Final operational capability

THE QUICKER, THE BETTER

This model, described in Enclosure 13 of DODI 5000.02, compresses or eliminates phases of the acquisition process and accepts the potential for inefficiencies to achieve a deployed capability on a compressed schedule. The model shows one example of tailoring for accelerated acquisition, and many others are possible. This type of structure is used when technological surprise by a potential adversary demands a higher-risk acquisition program. Procedures applicable to urgent needs that can be fulfilled in less than two years are a subset of this model. (SOURCE: Office of the Undersecretary of Defense for Acquisition, Technology and Logistics)

Recommendation

Contact contracting offices from other services to see if omnibus contracts are available to meet your procurement needs. Be aware that contract fees are typically charged to the requiring organization.

MINIMIZING ACQUISITION BUREAUCRACY

LL_139: Establish a SharePoint site to collaborate on documentation and streamline coordination and communication.

Background

Team C5ISR needed a common database throughout the quick reaction capability process because of the large amount of information sharing across multiple PEOs, program managers, disparate locations, etc. Team C5ISR capitalized on an existing SharePoint site at higher headquarters that allowed the team to use a subpage to collaborate on all existing documentation.

Recommendation

Establish a SharePoint site and use it as a configuration management tool. A SharePoint site will allow

organizations to collaborate on all existing documentation, reduce large file transfers over email and streamline team coordination and communication. Capitalize on an existing SharePoint site and create a subpage to shorten site development time.

LL_949: To shorten acquisition timelines, leverage DODI 5000.02 Enclosure 13 (Rapid Acquisition) wherever allowed in order to execute and document a program in parallel, rather than following the serial acquisition category (ACAT) structure.

Background
The Enroute Mission Command Capability provides military internet access and mission command capability for Soldiers in flight on Air Force C-17s to support rapidly deployed joint Global Response Force missions. It was the first Army program to use the new DODI 5000.02 Enclosure 13 for rapid acquisition to execute a production and deployment milestone. Enclosure 13 provides policy and procedure for acquisition programs that provide capabilities to fulfill urgent operational needs and other quick reaction capabilities that can be fielded in less than two years and are below the cost thresholds of ACAT I and IA programs. (See Figure 1.) While the program management office still has to prepare all of the standard acquisition documentation, it can execute the program in parallel, which shortens the acquisition timeline.

Recommendation
Replace acquisition models for ACAT II and III programs with Enclosure 13, thereby allowing documentation and execution to happen in parallel, rather than serially. This model should become the standard rather than the exception.

LL_795: Regardless of the milestone decision authority (MDA), allow those empowered to do so to make programmatic decisions to facilitate progress.

LL_672: When MDA and authority to conduct a materiel development decision were delegated from the Army acquisition executive (AAE) to a PEO, it greatly reduced the timeline for full deployment decision approval.

Background
Does every decision for ACAT ID programs have to go before the defense acquisition executive (DAE)? The MDA retains decision authority for some actions but delegates as appropriate.

The Airborne, Maritime, Fixed Station (AMF) radios are software programmable, multiband, multimode, mobile ad hoc networking radios that provide voice, data and video communications. AMF ensures the Soldier's ability to communicate both horizontally and vertically via voice and data within all mission areas. The MDA for AMF radios is the DAE; however, the products delivered under that umbrella have been organized into subprograms. For the Small Airborne Networking Radio, the DAE delegated decision authority to the AAE. Time may be saved going through a lower-level MDA as programs and oversight duties can be better distributed across decision-makers.

The Global Command and Control System – Army (GCCS-A) is the Army's strategic, theater and tactical command, control and communications system. It provides a seamless link of operational information and critical data from the strategic GCCS-Joint to Army theater elements and below through a common picture of Army tactical operations of the full deployment decision. When the AAE delegated MDA and authority to conduct a materiel development decision for the GCSS-A bridge effort to PEO C3T, it greatly reduced the timeline for full deployment decision approval. PEO C3T conducted weekly integrated product team meetings, working toward the full deployment decision, to discuss the program status and worked to keep tasks on schedule. Delegating the materiel development decision reduced the time between that submission and approval from 180 days to 120 days.

Recommendation
Recommend pushing decision authority to the lowest levels possible to better distribute programs and oversight duties across the potential decision-makers and remove unnecessary bureaucracy and potential program delays. Authority also may be delegated to lower levels for some decisions, such as those concerning subprograms, program modifications or bridge efforts, thus eliminating the need to go through additional gatekeepers to access the MDA.

*For more information on these and other Army lessons learned within the ALLP, go to **https://allp.amsaa.army.mil**; a Common Access Card is required to log in.*

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WHAT IS THE 'WHAT'?
Programs get bogged down when they're not well-defined, and that problem can get worse when a new PM rotates through. Taking steps to craft a well-defined problem statement can facilitate progress and minimize ambiguity. (Image by USAASC/Askold Romanov/iStock)

WHAT'S YOUR PROBLEM?

Providing strong, clear direction in the face of ambiguity is vital to an acquisition program's success.

by Col. Luke Cropsey and Mr. Peter Burke

An old adage about what the command "to secure the building" means to each military service goes like this: The Navy would turn out the lights and lock the doors. The Army would surround the building with defensive fortifications, tanks and concertina wire. The Marine Corps would assault the building, using overlapping fields of fire from all appropriate points on the perimeter. The Air Force would take out a three-year lease with an option to buy the building.

Although this adage is, of course, a joke, it also serves as a cautionary tale about the importance of a strong and clear problem statement within successful acquisitions. To "secure the building" barely describes "what" is to be done and leaves out the other two critical elements, "why" and "how."

Consider the situation facing a project manager (PM) who prepares for a team meeting the next day to kick off the materiel solution analysis for the Army's newest guided mortar cartridge. He read the capability development document, received some guidance from his program executive officer (PEO), spoke to his customer counterpart at the U.S. Army Maneuver Center of Excellence and met with his resource manager at HQDA. He needs to unleash his team to generate a wide range of possibilities to meet

INCOMING!
A 155 mm Copperhead anti-armor projectile nears its target at White Sands Missile Range, New Mexico, in February 1984. Operating issues with the Copperhead left thousands in inventory and unused for decades despite two tank wars in Iraq. The problems might have been prevented if the critical elements of "why, how and what" had been employed early in the projectile's development. (Photos by Tom Moore, U.S. National Archives and Records Administration)

the user's requirements while balancing cost, schedule and risk, and he knows that a good problem statement is critical to kick off the discussion. Framing it too narrowly could mean missing valuable opportunities for better capabilities, but making it too vague could result in months of program churn as the integrated product team chases tasks that have nothing to do with the real problem facing the customer.

How should the PM proceed? They key is to arrive at an appropriate level of detail so there is clear understanding about the problem without overly constraining the options that may be available.

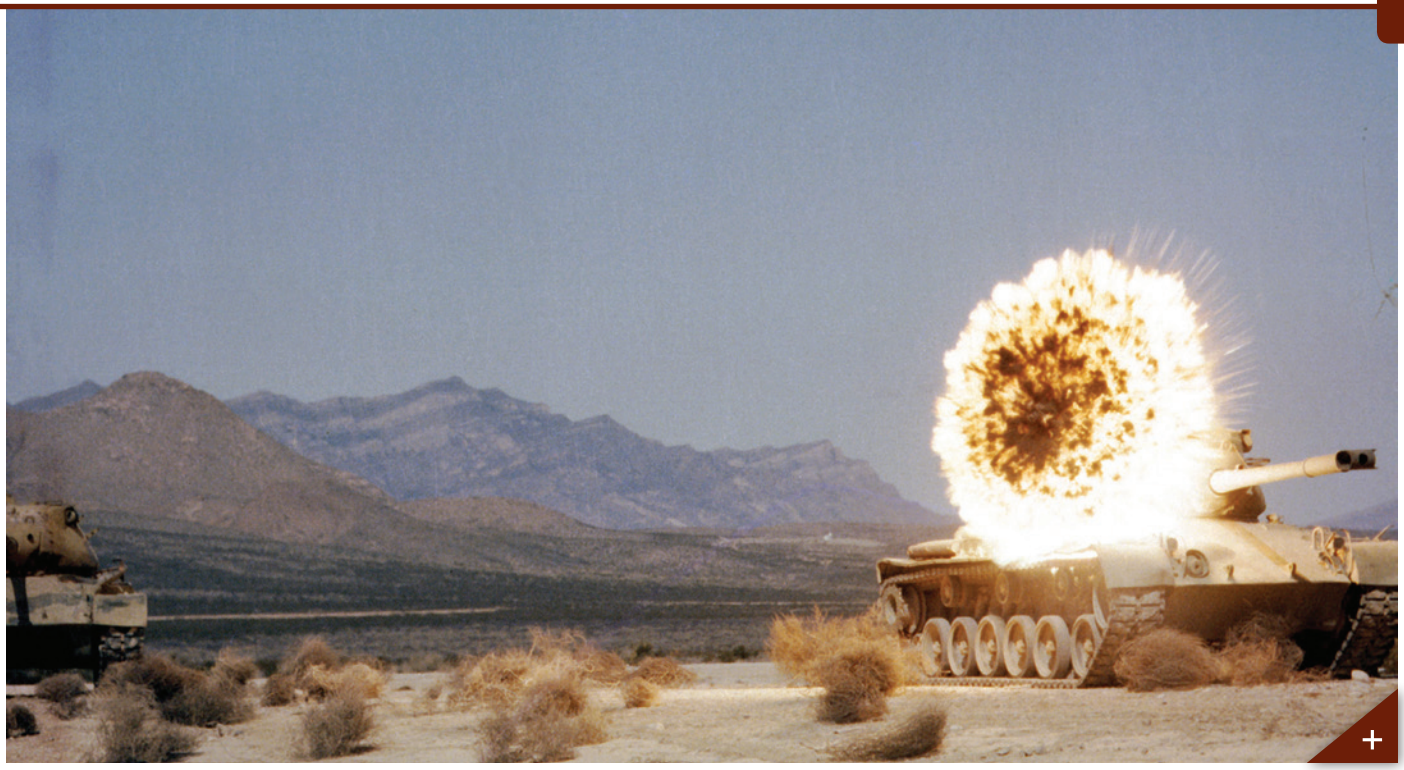
In the process, the PM must control the complexity of the problem, allowing him to understand it in its entirety in the process of solving it. Current weapon systems are some of the most complex man-made creations the world has ever produced, and a PM can quickly become lost in the myriad variables, options, interdependencies and priorities, with little better than serendipity to fall back on when the program runs into challenges. The PM can control complexity by developing a clear problem statement that focuses on the most important issue.

Carefully constructed problem statements resolve ambiguity, control complexity and focus creativity. These three factors are central to a well-structured effort. It is human nature to jump out of the problem definition stage and into solution-seeking before fully understanding or articulating the true problem. A clearly articulated problem statement prevents this.

NO STATEMENT, NO SOLUTION

Unless the problem statement is constructed carefully, bias, ambiguity and missing needs can occur with disastrous results. In the 1970s, a laser-guided, 155 mm artillery projectile known as Copperhead countered the threat of massed Soviet armor in Eastern Europe. Copperhead could detect, guide-to and hit an armored target, and the large, shaped-charge warhead was consistently lethal against its target set.

Its development and qualification were successful, and industry produced thousands of projectiles for the Army in the late 1980s.



ON TARGET
The Copperhead, produced in the late 1980s and shown here impacting its target, was consistently lethal against its target set. With a few modifications to the program's development process—a better-defined goal and a clear metric for measuring achievement of it—the round might have seen more usage in combat.

However, more than 20 years later, nearly all of the Copperheads are still in inventory despite U.S. forces fighting two wars against armored threats in Southwest Asia. Anecdotal comments from field artillery units may explain why, such as:

- Most Soldiers never trained with the Copperhead in a live-fire situation.
- The projectile was expensive ($34,000 when procured in the 1980s).
- It was difficult to set up firing conditions.
- There weren't enough laser designators in the force.

Could these issues have been prevented if the initial problem statement—including the critical elements of "why, how and what"— had been generated at the outset?

THE FRAMEWORK

A good problem statement is solution-neutral and outlines how value is created. In acquisition terms, this could be developing a materiel solution for a capability gap, finding the root cause of a test failure, solving organizational inefficiencies or a problem facing our professional workforce.

A problem statement, as defined by Dr. Edward F. Crawley, Ford Professor of Engineering at the Massachusetts Institute of Technology must include:

1. **To …:** The enterprise or stakeholders' intent, or the "why" you are attacking the problem; what value are you trying to create?
2. **By …:** The "how," using solution-neutral verbs such as create, destroy, transport, transform, compare, etc. (See Figure 1.)
3. **Using …:** The "what," or statement of structure; this introduces cost.
4. **While …:** The details of other important goals or constraints.

It is very important to carefully construct the "how" statement with solution-neutral verbs to spur divergent thinking that will create ideas for solving the problem. Unintended framing can occur if the chosen verb instantly narrows the possibilities

FIGURE 1

STAYING INSIDE THE BOX
Judiciously build the "how" statement with solution-neutral verbs to spur divergent thinking that will create ideas for solving the problem. Selecting verbs that unintentionally limit possible solutions could mean missing valuable opportunities for better capabilities. (Image courtesy of the authors)

and converges on a smaller set of possible actions. For example, if a hospital is looking for ways to improve the speed of care to car accident victims, inserting the word "driving" into its problem statement can shut out many other possibilities such as air, rail or water transport, or even virtual care applied at the scene by first responders.

Had the original problem statement for the Copperhead included goals addressing the training of field artillery units in this new capability, such as, "while ensuring that a realistic and affordable training system for unit home station and national training centers (less than $1,000 per training mission) is completed prior to production," the warfighter might have gotten more value from the large investment made in its development and production program.

Including "live or die" goals, key metrics that will guide thinking during development, ensures that the team understands what is most important to the user. An easy place to start is in the key performance parameters (KPPs) of requirements documents. In the case of the Copperhead, had a KPP included a defined goal (with a clear metric for measuring achievement of the goal) for an affordable and realistic training system, the round might have been put to more widespread usage in combat. Once these metrics are inserted into the problem statement, all team members will know what the guiding, tangible goals are, which will influence their thinking. For example, the phrase "average unit cost of $5,000 (FY16 dollars)" is much more powerful than a nebulous term like "low cost." A clear dollar amount will shape material selection, manufacturing processes, technology maturity and design complexity for the remainder of the program.

The following system problem statement is an example of a poor start for the PM's materiel solution development phase. (In this example, assume that an analysis of alternatives has been completed, and a materiel solution, a new mortar cartridge, is the most effective approach.)

"Provide the U.S. Army with a cost-effective precision mortar cartridge to defeat enemy targets." This is not a complete problem statement: It is too ambiguous, system goals are undefined, there is no explanation of the "why" or the stakeholder's intent, and there are no clear metrics.

A much better statement would be, "Provide the U.S. Army a system to quickly defeat personnel with low collateral damage, by destroying enemy combatants with XX percent expected fractional casualties in Y rounds or less, using a mortar cartridge with a program average unit cost of $ZZ,zzz." This statement includes the key facets to focus the team's attention and creativity, as it includes: "To …" (intent) + "By …" (solution-neutral process) + "Using …" (process attribute + object) + "While …" (object attribute).

THE ANTIDOTES

- Challenge problem statements continuously. Almost without exception, the initial articulation of the problem will be insufficient or even flat-out wrong. Asking a series of "why" questions will help continue to refine the overall intent and desired functionality of the solution. A good problem statement requires an iterative process with multiple passes to get the scope, level of detail and solution concept right.

- Watch for unspoken assumptions by people framing the problem in solution-specific terms. For example, using functional verbs such as "tape" that drive the team in one direction may too narrowly frame solution sets, especially in the early phases of the effort. A better verb for keeping options open would be "attach." Force additional rigor in the process to begin with solution-neutral functional statements. This will naturally turn the dialogue to clear statements of what creates value

and leave the trade space as broad as possible in the early stages.

- Carry expanded and contracted versions of the problem statement as options. It is sometimes difficult to truly understand what your stakeholders really need, so be flexible in your thinking. A key method of building alignment across the PM team is to work collectively with the problem statement by expanding and contracting the scope until the team can coalesce around the level of detail. The scope should be within the PM team's ability to control (ideally) or influence (at worst), or the outcomes will be outside the team's ability to affect.

- Invite diverse thinkers to early meetings. Too many people who think just like you can lead to a biased viewpoint. Seek out people with big ideas or from different backgrounds (contracting officer, cost analyst, system analyst, etc.)

- Make sure stakeholders buy in. The "why" of what you are doing is critical to maintaining their support and their confidence in the team. The "representative of true success" must be revisited on a regular basis to ensure that the solution actually matters. In the words of Winston Churchill, "No matter how elegant the strategy, someone should occasionally look at the results."

- Create early models to test attainability. Does your program office's estimate for development cost show that a course of action is within budget? In a technical problem, does your finite element analysis tool show that stress levels are within the material properties of available technology? How much margin does a given solution provide on the cost, schedule and performance requirements? How much affordability risk does a particular concept or solution create? The longer it takes to produce the solution, the higher the risk of funding instability, requirements creep or threat evolution.

Testing your stakeholders' interest in the "why" of your statement can also illuminate your path. For example, if you, as the PM, framed the original "why" from the perspective of your PEO, modify it one level up to the perspective of the PEO's boss, the service acquisition executive. In the example of the mortar cartridge, another measure of success might include system compatibility with a future platform or low cost of maintainability over its shelf life. Likewise, move the perspective down one level below the PM to the system engineering lead. Does that person's measure of success for creating value include ease of platform integration? If your problem statement aligns with your key stakeholder's interests, is solution-neutral and is solvable by real people, you are off to a great start.

Including "live or die" goals, key metrics that will guide thinking during development, ensures that the team understands what is most important to the user.

CONCLUSION

Programs get bogged down when they're ill-defined. That lack of definition only gets worse when a new PM rotates through. If the problem statement results in a materiel solution that takes too long to deliver or does not meet customer needs, it could waste millions of dollars.

Consider the situation facing a PM who has just taken over a program to produce the Army's newest guided mortar cartridge. A well-defined program, based on a well-defined problem statement, should allow for program business to continue as usual, with little or no ambiguity facing the team, and little danger of the program getting bogged down.

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Yoga for DATA

The path to enlightenment is not a straightforward one, for people or for data. That's why flexibility is key when reaching for answers, and why it's necessary to stretch data so that it can lead to more, better knowledge.

by Mr. Thom Hawkins and Mr. Matt Choinski

As acquisition professionals, with the hindsight of five, 10 or 20 years' experience, we can move from blindly populating templates to an intuitive understanding of the connections between schedules and risk management, between our strategic plan and our daily operations. But even with experience, none of us has reached the pinnacle of perfect execution. There's always more to learn, and the worst thing we can do is to close ourselves off to adaptation.

The Army's No. 1 priority, readiness, must also be our top priority, and our readiness must be the ability to adjust to a rapidly changing world. We must be ready with the ability to provide new weapon system capabilities or information systems that can accommodate new categories of data, new ways to understand the complex world the warfighter faces.

THE DHARMA OF INFORMATION-SEEKING BEHAVIOR

Our information systems are not as dynamic as our information-seeking behavior. As T.D. Wilson notes in his paper "On user studies and information needs," "It may be advisable to remove the term 'information needs' from our professional vocabulary and to speak instead of 'information seeking towards the satisfaction of needs.' " This is our dharma, our path to truth, cosmic order. Wilson's point is that information needs aren't static—they change over time.

IT'S THE CLIMB
Summiting the pyramid of knowledge might be a difficult goal, acquisition-wise: Rarely does the Army field a system that answers its needs today, and it's even more challenging to field one that will answer the needs of tomorrow. But progress along that path—and military readiness—depend on how well Army information systems respond to requests for that information. (All images courtesy of Matt Choinski)

"Now that I know that, I want to know this." Now that I know we're obligating the funds too early, why don't we have better insight into the contractor burn rate? Each one of these questions would require a change to the structure of a database. A slightly different question may require changing how data are collected, stored or queried.

The Army's ability to sustain its information systems is dependent upon the flexibility of those systems. If those systems cannot adapt to changing information needs, we will see a quick transition to obsolescence followed by another expensive investment in the next generation, or even another overlapping system, maintained alongside the first one. Information-seeking behavior on its own isn't expensive, but what if you have spent thousands of dollars building an infrastructure to collect the data to provide the information? In other words, we can't afford to change our minds about what we want to know.

YOGA FOR DATA

Our traditional data warehouses are highly structured and so rigid that they have become brittle. We need yoga for our data structures to increase their flexibility, to adapt to information-seeking behavior. The body of a data warehouse is its schema, a set of constraints that tells what the data must look like. Data must fit the schema to be entered into a database. If we want to add data that don't fit the schema (for example, if we want to add a contractor burn rate not previously captured), then we must change the schema. While modifying the schema is marginally easier than forcing a human body into a new and difficult yoga position for which it has not prepared, it is still a costly and time-consuming exercise.

ADAPT OR FADE AWAY

Army readiness depends in part on the flexibility of its information systems to provide information when it's needed. Sustaining those information systems is dependent upon their flexibility, and those systems that cannot adapt to changing information needs will soon become obsolete.

Because both our tactical and enterprise information needs change so rapidly in contrast with our requirements development and system procurement, rarely will we field a system that answers the needs of today's Army, and never will we field one that will answer the needs of tomorrow's Army.

One of the underlying assumptions of a modern data warehouse is that the data must follow a common schema—if data is not consistent in description, in how it is measured, then we can't rely on it to allow us to make that leap from data to information. This is a good assumption, but we're applying it too early. We're applying it to data collection rather than data analysis.

Forcing data into a common format complicates the process of pulling in data from other information systems. Imagine if we took the water piped into our houses and immediately separated it based on need. We'd have one tank of hot water with soap for showers, one tank for water with toothpaste for brushing our teeth, one for washing dishes, one for drinking, and so on. If we run out of drinking water, we can't use the dishwater, because it isn't suitable. This is what we're doing with our data when we force it into a schema—we're assuming a particular use, but if we have a different question, it may not be suitable.

NAMASTE, DATA LAKE

A more efficient method is what we already do: Transform the water at the point of need, and add toothpaste when we're ready

DIVING DEEPER

Unlike a traditional relational database, where a structure is applied at the time the data are added to the warehouse, the structure in a data lake is applied when data are needed. The result is a more flexible, responsive pool of information.

to brush our teeth, or add soap when we're ready to wash the dishes. With information systems, a pool of unstructured data is called a "data lake." The key distinction between a data warehouse (a traditional relational database) and a data lake is when a structure is applied to the data. In a data warehouse, the schema is applied at the time the data are added to the warehouse; in a data lake, the schema is applied when data are called upon to answer an information need.

The data lake, therefore, is a better model for changing information needs. In the data lake model, information workers who understand what data are available and what the customers' needs are at that time find the appropriate data and package it for each new information requirement. Users closer to the question are better positioned to answer it using the data at hand.

Recurring information needs can be answered just as quickly with a data lake as with a data warehouse, through a standard query and applied schema. As needs change, though, the data lake is the more responsive model—the data to answer the information need may already reside in the lake, or if not, can be extracted from other sources without any changes to the underlying infrastructure.

One application of the data lake concept is MIRARS, the Manpower Information Retrieval and Reporting System. MIRARS is designed by the product manager for military technical solutions in the Program Executive Office for Command, Control and Communications – Tactical (PEO C3T) to provide personnel accountability (for example, through a daily roll call of employee locations). Several Army acquisition organizations rely on MIRARS for location awareness of their personnel in case of emergencies or other events. In the January 2016 active shooter event at the Naval Medical Center San Diego, these organizations were able to use MIRARS to determine almost instantly that no personnel were in the affected area.

Because of its flexible design, MIRARS can be modified quickly to accommodate new requirements from leadership without the difficult and cumbersome data migrations typical of relational

databases. The ability to quickly adapt to new requirements is important because of the ever-increasing constraints on resources and budgets. Using a flexible schema allows teams to develop faster and in a more agile fashion, resulting in lower development and maintenance costs and higher-quality products.

A database structured by the relationships between its data elements is not flexible enough to withstand the stress of managing requirements from multiple stakeholders. Instead, adding a new field is now as simple as adding the element to the resulting report—there are no direct changes applied to the database or its schema. For example, when there was a new requirement to track mandatory training for personnel, that information was added to the data lake, changing the source code but with no need to change other database objects, like views or stored procedures. This capability also helps to resolve seemingly incompatible requirements from various stakeholders, such as associating matrixed personnel with their home organization or their matrix organization, because the data does not need to be changed, only the way each user sees it.

PEO C3T built MIRARS using MongoDB's nonrelational database software, taking advantage of this structureless revolution. MongoDB's other organizational users include Fortune 100 companies as well as local governments, along with the City of Chicago and Craigslist. The City of Chicago used MongoDB to build a predictive data management platform called WindyGrid that pairs analytics with maps to provide real-time insights on city operations. WindyGrid's SmartData project allows Chicago city managers to predict trends and potential situations such as traffic congestion, resident migration and the depth of floods.

With 1.5 million new classified ads posted daily, Craigslist has built an archive of records numbering in the billions. Using a traditional relational database, Craigslist would need to apply schema changes to that entire archive to maintain the integrity of its data. By converting to a data lake concept, Craigslist can change the format for new ads or diversify the format across different types of ads without compromising access to its valuable historical data.

These applications by the City of Chicago and Craigslist have a clear relevance to today's Army, extending forward to access and use mountains of data to inform decisions, and bending backwards to maintain access to historical records that could be mined for information if only we could afford to convert them to accessible formats.

THE PATH TO ENLIGHTENMENT

We may never achieve the wisdom of the yogi, but we can learn through seeking and, as we seek, changing. As demonstrated by MIRARS, the endurance of a tool is based on its ability to change with the perspective and needs of its users. The information systems we're building now, with their emphasis on responding to yesterday's questions with today's answers through a rigorously structured framework, will become legacy systems before we field them.

Because both our tactical and enterprise information needs change so rapidly in contrast with our requirements development and system procurement, rarely will we field a system that answers the needs of today's Army, and never will we field one that will answer the needs of tomorrow's Army. Our continued readiness is dependent on the versatility of our information systems to respond to our information-seeking behavior. Only by building flexibility into our systems through adaptive information techniques like the data lake will we maintain relevance without continuous unsustainable investment.

Unless we stretch, the peak will be forever out of reach.

For more information, go to ***http://peoc3t.army.mil/c3t****. Information about the data lake concept can be found at* ***http://martinfowler.com/bliki/DataLake.html****, and information about MongoDB is at* ***https://www.mongodb.com****.*

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ACQUISITION REFORM Baked-In

Army PNT program uses open systems architecture, competitive prototyping to spur continuous innovation.

by Mr. Kevin M. Coggins

While acquisition reformers debate changes intended to put programs on the path to success earlier in their life cycle, one critical Army program is already living that goal.

That would be the program management office for Positioning, Navigation and Timing (PM PNT), which reports directly to the Army acquisition executive. PM PNT is charged with delivering next-generation positioning and timing technologies and has embraced key elements of acquisition reform and Better Buying Power (BBP) 3.0. In partnership with industry and government organizations, the PNT program office is using open systems architecture and competitive prototyping to structure a program that's intended to drive continuous, disruptive innovation to support the warfighter and overcome emerging threats and challenges.

ASSURED PNT STRATEGY

Global Positioning System (GPS) technology has become an integral tool in safely navigating, gaining and maintaining force positions in the field. But as the threat environment changes, our adversaries have become more sophisticated in attacking existing GPS capabilities. The Assured PNT (A-PNT) strategy pursued by PM PNT is addressing this challenge, with three main objectives:

- Increased protection.
- Increased efficiencies.
- Affordable migration path to Military Code (M-Code), a new signal from space with improved security and anti-jamming capabilities.

Increased protection ensures readiness—the Army's No. 1 priority. As the Hon. Eric Fanning, secretary of the Army, recently testified before

PM PNT is engaged in competitive prototyping with industry that will help us execute a better acquisition, ensuring that modernization continues for the life of the program.

Congress, "Having accurate PNT information is fundamental to our forces' ability to maintain initiative, coordinate movements, target fires and communicate on the move." Other senior leaders agree. (See sidebar.) To equip Soldiers to safely navigate and communicate in any environment, meet current threats and pace the emergence of threats, we must integrate new capabilities in the field and invest in the future to ensure that we continue to overmatch our adversaries.

The increased efficiencies objective addresses systemic issues in the adoption of GPS technologies that have resulted in redundant procurement and integration costs. These redundant costs are associated with the use of multiple GPS receivers on the same platform, with resultant power and weight burdens on mounted platforms and on the Soldier.

The third objective addresses DOD's plan to modernize the GPS capability to M-Code. This requires replacing most of the hundreds of thousands of GPS receivers already integrated into our weapon systems with receivers that are M-Code compatible. We are working to achieve this mandate at the lowest possible cost through platform distribution of PNT, open systems architectures, and thorough systems engineering to ensure that we procure M-Code receivers that meet Army requirements. Affordability is about being a responsible steward of taxpayer dollars, and we take this very seriously.

SYSTEM-OF-SYSTEMS ARCHITECTURE

To achieve these objectives, A-PNT combines materiel solutions, such as GPS, sensors and other technologies, into an architecture that brings increased reliability and security. This approach makes A-PNT a holistic system-of-systems (SoS) capability for which one aspect alone is not sufficient. For example, if a dismounted Soldier has a requirement for his PNT device to have a certain level of accuracy, pseudolites (or pseudo-satellites, acting in place of GPS) can be used to send radio frequency signals to the dismounted device. The sum of these parts working together is how the requirement is fulfilled. The capabilities complement one another in order to provide our forces with unhindered access to trusted PNT information in all conditions.

The SoS architecture approach also will reduce size, weight and power (SWAP) for the warfighter and platform by decreasing the number of individual GPS devices a Soldier or vehicle needs to carry. For example, one of the solutions within the A-PNT capability is the D3 (Defense Advanced GPS Receiver (DAGR) Distributed Device). The D3 provides a single platform for simultaneous distribution of PNT data to multiple systems that require secure GPS information. It is the first product that complies with the PNT SoS architecture, and it is currently being installed on the M1200 Armored Knight vehicle.

For mounted platforms, D3 is a key component of the A-PNT capability—eliminating redundant systems and simplifying future migrations, which over time will reduce costs. With D3, the Army has one PNT device servicing up to eight clients. This allows us to remove antennas, power cables, data cables and GPS receivers that are no longer needed from the vehicle. The D3 is also upgradable to M-Code.

SENIOR DOD LEADERS SPEAK OUT ON PNT

"While DOD will of course continue to support the GPS satellites, which we engineer and launch … we also need to find alternatives for military use that are more resilient and less vulnerable."

—Secretary of Defense **Ash Carter**

"Enhancement of positioning, navigation and timing is critical to the Army."

—Secretary of the Army **Eric Fanning**

"We're investing in the development of assured PNT enablers. This provides access to trusted PNT information, while responding to numerous threats."

—**Ms. Steffanie B. Easter**,
Principal deputy to the assistant secretary of the Army for acquisition, logistics and technology

DAWN PATROL
Soldiers with the 2nd Armored Brigade Combat Team, 1st Armored Division (2-1 ABCT) conduct early morning operations in the training village of Khuribad, during the Network Integration Evaluation 16.2, at Fort Bliss, Texas, in May. New PNT capabilities are needed to equip Soldiers to safely navigate and communicate in any environment. (U.S. Army photo by Sgt. Aura E. Sklenicka, 2-1 ABCT Public Affairs)

To stay responsive to evolving threats, there is an open architecture requirement within the A-PNT SoS concept. As Congress has noted in acquisition reform proposals, open architecture systems provide more flexibility and potential cost savings than closed systems. Open architecture supports forward compatibility that will provide the ability to adapt to emerging needs and disruptive technology improvements with a "plug and play" capability. For instance, rather than conducting a complete redesign of a device when changes need to be made, which would be required on a legacy GPS receiver, with A-PNT, a new chip card could be inserted into a client system, thus instantly increasing its capability. This is a more efficient and affordable solution and follows DOD's BBP 3.0 guidance to use modular open systems architecture to stimulate innovation.

INDUSTRY PARTNERSHIP

Indeed, we are already seeing industry innovation through the plug-and-play open architecture approach. Vendors understand that the Army isn't looking for stand-alone devices, but rather an SoS that boosts the overall capability. To create a pathway for this innovation, PM PNT is engaged in competitive prototyping with industry that will help us execute a better acquisition, ensuring that modernization continues for the life of the program.

For example, a recent Small Business Innovation Research contract demonstrated open architecture capabilities on a dismounted A-PNT system. The work showed the ability to change out two different vendors' GPS cards, different types of inertial sensors and a chip-scale atomic clock in an open environment. Additional prototyping contracts have been awarded for pseudolites, and other partners are working on A-PNT prototypes for mounted platforms.

These prototyping efforts are a key part of the acquisition strategy for A-PNT, as they are helping to define requirements for post-Milestone B engineering and manufacturing development contracts. Like open architecture, early prototyping is a major area of emphasis in congressional efforts at acquisition reform. By executing these efforts prior to Milestone B, we can not only incorporate state-of-the-art technologies and techniques into

our later contracts, but we can also avoid costly changes to the program in the future.

The relationship with industry goes beyond prototypes and includes open and ongoing communication. In April 2016, PM PNT released a request for information (RFI) to solicit industry feedback on the requirements and proposed acquisition strategy for the A-PNT program. The RFI asked for industry's feedback on potential acquisition approaches, including an incremental delivery strategy, as well as different contract types, potential small business participation and compliance with additional Army open architecture standards. Following the RFI, PM PNT hosted an industry day on Aug. 2-4 at Aberdeen Proving Ground, Maryland, to update potential vendors on the Army's planned timeline and structure for A-PNT.

GOVERNMENT PARTNERSHIP

In addition to partnerships with industry, the PM PNT program office works with various government organizations both within the Army and from other services—looking beyond our immediate silo to develop and deliver the most reliable and efficient PNT solutions. Within the acquisition process, PM PNT has two very important Army allies: the U.S. Army Training and Doctrine Command (TRADOC) and the U.S. Army Research, Development and Engineering Command (RDECOM). Once gaps are identified and needs are assessed by the PM, TRADOC is responsible for determining the official requirements. From there, RDECOM's research and development expertise determines what technologies exist or can be pursued to fulfill those requirements. RDECOM looks at what is feasible at present to combat the current threat, while also looking into the future—what are the new technologies on the horizon, and how can we increase our capability to meet the emerging threat?

TRADOC plays another integral role in PNT: training. TRADOC trains the Soldiers and operators of our integrated systems to know how to operate when their GPS is not available. As it will take time to upgrade to A-PNT, it is critical to train in environments where GPS does not work. Our Soldiers must demonstrate the ability to improvise and adapt when GPS is not available and successfully execute the mission.

The PNT program office is using open systems architecture and competitive prototyping to structure a program that's intended to drive continuous, disruptive innovation to support the warfighter and overcome emerging threats and challenges.

SIR KNIGHT
D3 provides a single platform for distribution of PNT data and is currently being installed on the M1200 Armored Knight. D3 eliminates redundant systems and simplifies future migrations, which over time will reduce costs. (U.S. Army photo by Staff Sgt. Tracy Smith, Georgia National Guard)

READY OR NOT
Soldiers with the 2-1 ABCT employ a dismounted offensive against opposing forces in the training village of Zamania, Fort Bliss, Texas, in May. Assured PNT combines materiel solutions, including for dismounted and mounted Soldiers, into an architecture that brings increased reliability and security. (U.S. Army photo by Sgt. Aura E. Sklenicka, 2-1 ABCT Public Affairs)

The Army also works very closely with organizations in our partner services, such as the Air Force Research Laboratory, the Naval Research Laboratory and the GPS Directorate, to name a few. These partner organizations are performing cutting-edge research and other work that directly benefits the Army PNT mission.

To facilitate collaboration with these and other partners, align capabilities and continue planning for the transition to A-PNT and M-Code across the program executive offices, an Army PNT integrated product team (IPT) was established under the direction of the assistant secretary of the Army for acquisition, logistics and technology. The PNT IPT provides the domain and functional expertise to ensure production of the SoS architecture. The PNT IPT meets biannually with individual working groups gathering throughout the year to work through the specialized challenges for their domains. This meeting of the minds helps to further innovation and support BBP 3.0 by carefully considering and distributing each requirement to develop the highest-quality product for the Army.

CONCLUSION

A paradigm shift in GPS technology is taking place, and PM PNT is taking charge in leading the Army to more efficient and robust PNT solutions. In delivering capabilities beyond GPS, we must also reduce SWAP and maximize affordability, all while ensuring that PNT is seamless, simplified and trustworthy for the Soldier. Identifying complementary and alternative PNT sources that work well together in an integrated environment is key to readiness. With acquisition reform and BBP 3.0 informing every step we take, we will continue to shape a program exhibiting continuous innovation and technical excellence.

For more information, go to ***https://www.pmpnt.army.mil****.*

MR. KEVIN M. COGGINS, Senior Executive Service, is the program manager to the direct reporting PM PNT. He holds a B.S. in electrical engineering from the University of Florida, with studies and research focused in the fields of computational neuroscience, signal processing and sensors. He is Level III certified in program management and systems engineering. He is a member of the Institute for Electrical and Electronics Engineers, the Institute of Navigation and the Army Acquisition Corps.

ADDRESSING THE FUTURE
Afghan Army Maj. Gen. Dadang Lawang, chief of defense strategy and policy for the Ministry of Defense, addresses the force management class. Additional and more advanced force management courses will be necessary over the next several years, as part of the mission to help the country develop its own force management doctrine. (Photos by Navy Lt. j.g. Christopher R. Hanson, CSTC-A Public Affairs)

DEVELOPING AFGHAN FORCE MANAGERS

CSTC-A's Capabilities Development Directorate helps Afghan officers learn how to build, employ and resource units.

by Col. Garrett D. Heath and Lt. Stephen E. Webber

On Camp Resolute Support in Kabul, Afghanistan, officers from the Afghan National Army (ANA) and Afghan National Police (ANP) gathered from April to June to hash out the fundamentals of what, until recently, was a foreign concept to most if not all of them: force management.

Through open-ended brainstorming exercises in which there were no wrong answers, just learning opportunities, the students created hypothetical units, such as a new Kandak (an ANA battalion). In the process, they addressed the unit's structure, manning, equipping, training and sustainment while balancing materiel requirements with available resourcing. They determined the hypothetical unit's purpose and how it would be employed, then discussed how to resource it and the possible trade-offs necessary to field the unit given current and foreseeable fiscal constraints.

This kind of inquiry, analysis and planning, provided in an eight-week course taught by advisers from the Capabilities Development Directorate (CDD) of the Combined Security Transition Command – Afghanistan (CSTC-A), is essential before ANA and ANP force managers can effectively advise their Afghan senior leaders on translating strategy to army and police structure. CDD implemented the course, "Force Management: The Basics," as part of its routine train, advise and assist mission. The four-hour classes, which took place every Wednesday for the three months, are a key component of our work with Afghan partners to enhance their abilities to advise senior leaders independently over the long term.

LAYERS OF COMPLEXITY

U.S. force management consists of very mature processes that establish and field mission-ready organizations. In Afghanistan, the processes are far less mature and focus on the basics of planning personnel and materiel requirements within resource constraints for unit authorization documents. Increasing the maturity of these processes requires that the Afghans have a greater understanding of doctrine, organization, training, materiel, leadership, personnel, facilities and policy (DOTMLPF-P), as well as doctrine development and sustainability and affordability analysis. Today, CDD is responsible for advising both the Ministry of Defense (MOD), which governs the ANA, and the Ministry of Interior (MOI), which

EYES RIGHT
Members of the Afghan National Police and the Afghan National Army celebrate completion of a class led by CSTC-A's CDD. The course, begun in April, is designed to teach Afghan security personnel the ins and outs of force management.

CREATING A FOUNDATION
Stephen Barth, a member of the Senior Executive Service and the director of resource management for CSTC-A's train, advise and assist mission, presents a graduation certificate to an Afghan National Police colonel. The course was developed to address a big challenge faced by the MOD and MOI: to develop military and national police forces without a reserve of institutional knowledge or a cadre of force managers to draw from.

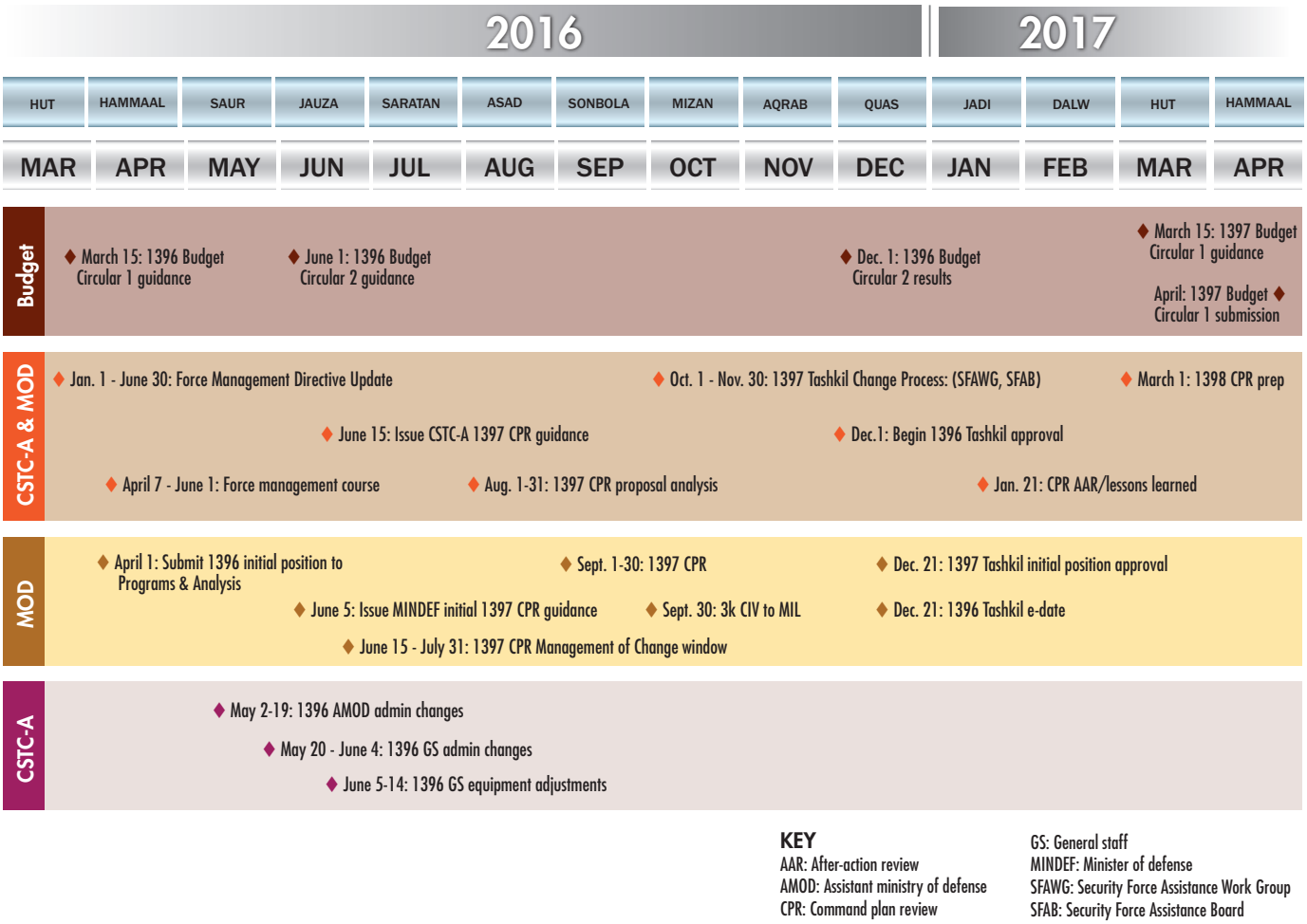
governs the ANP. Tables of organizations, or "Tashkils"—authorization documents similar to the U.S. Army's modified table of organization and equipment—reflect the CSTC-A's resourced authorizations for the Afghan national defense and security forces (ANDSF) personnel and equipment. The ANDSF encompasses the Afghan army and police.

CDD manages the Tashkils using two adviser teams, one dedicated to the MOD and the other to the MOI, and engages with all levels of coalition and Afghan leadership to understand what capabilities the ANDSF needs and how to resource those capabilities.

In early 2015, CDD advisers and their CSTC-A leadership realized that the Afghan force managers needed to move beyond Tashkil management—tracking force structure and associated resource costs—to true force management, developing processes and systems for the ANA and ANP so they can sustain themselves, evolve and assume full responsibility for protecting the nation and its people. Currently, the MOD and MOI are challenged to develop military and national police forces without a foundation or reserve of institutional knowledge or a cadre of force managers to draw on.

CDD's analysis of lessons learned from the previous command plan review (CPR) indicated the need to address gaps in Afghan force management capacity. The CPR is an annual Afghan-led process whereby Tashkil changes are recommended to close capability gaps and build national defense forces within established force personnel caps and funding constraints for materiel requirements. The directorate saw an opportunity to educate its Afghan counterparts in force management and thus enable them to take the lead in these joint ventures.

FIGURE 1



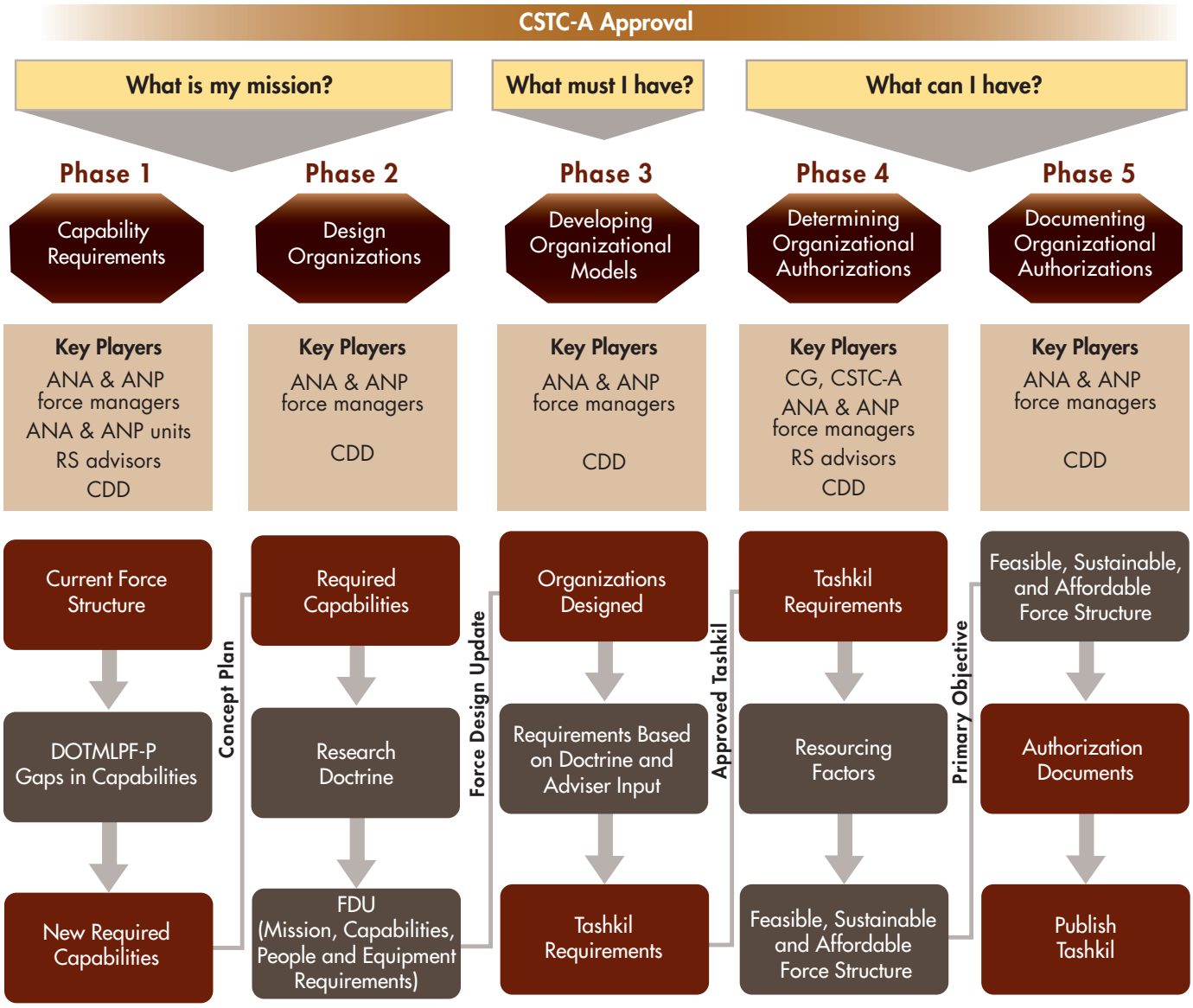
PLOTTING IT OUT

Force managers in the MOI and MOD are expected to apply what they learned as they conduct their command plan review and prepare Tashkils for 2018, a process detailed in this timeline for the MOD. The Security Force Assistance Work Group is an action-officer-level forum that works to solve problems that must be synchronized across the command. The Security Force Assistance Board is a senior-executive-level forum that receives Tashkil development and status updates, and will endorse recommendations for approval. (Image courtesy of Col. Garrett D. Heath)

The classes are designed to expose Afghan force management leaders to U.S. Army force management concepts and doctrine. Classroom instruction allowed students to develop as independent thinkers and true teachers who will continue to shape their organizations. Through problem-solving, group exercises and open discussion, students have learned to think like force managers: identifying capability gaps, planning to requirements, providing force options to senior leaders and properly allocating resources to achieve a desired outcome.

During summer and fall this year, ANA and ANP force managers are expected to apply what they learned during the course as they conduct their 1397 (or calendar year 2018) CPR and prepare the 1397 Tashkils. (The ANA and ANP force managers use the Solar Hijri calendar, which is the official calendar of Afghanistan.) In August, CDD and the Afghan force managers analyzed all CPR proposals submitted by Afghan organizations. The CPR was scheduled to take place from Sept. 1 to Sept. 30, led by Afghans and attended by CDD advisers. (See Figure 1)

FIGURE 2



GETTING FROM HERE TO THERE

The Afghan force development process detailed here is an adaptation of the more mature and complex U.S. force management development process, with boxes indicating where Afghan force managers have developed capability thus far. Intellectual challenges, as well as Afghanistan's current systems and processes, limit how much of the U.S. process is feasible to implement in Afghanistan. (SOURCE: Maj. James K. Starling, CSTC-A CDD)

In October and November, CDD and the Afghan force managers will work through the Tashkil Change Process. (For more about the process, see "Bringing Afghan Defense Forces Under Budget," Army AL&T magazine, April-June 2016.) ANDSF leaders will have to make some tough decisions about needed capabilities and resourcing, so there is a high demand for trained staff with the skills to assist in the process.

BUILDING KNOWLEDGE LEADERS

MOD and MOI senior leaders sent 22 force managers ranging from captain to colonel to attend the classes at Camp Resolute Support. The course was at maximum capacity, and all students were enthusiastic about honing their craft and making a difference for their nation—as was evident in the questions they asked: Why, for instance, had CSTC-A disapproved establishing units that their most senior officials had approved? Why did existing units lack needed facilities? We answered these questions in detail as we taught balancing resourcing with requirements (sustainability and affordability analysis) and DOTMLPF-P.

Each session began with remarks from a coalition or Afghan senior leader. Among the speakers was Brig. Gen. Mohammad Akbar, MOI force management director. "The hard work of our Afghan security personnel and the support of CSTC-A will help improve our organizations as we grow as leaders and managers," he said. The Afghan senior leaders also were beginning to understand the need for force managers to provide analysis for informed decision-making.

Maj. Gen. Paul A. Ostrowski, CSTC-A deputy commanding general for support, led a class discussion about the integration of new aircraft into the ANDSF force structure. "It's not just about buying aircraft, but holistic thinking in order to make the hard decisions on modifications to doctrine; additions of specialized personnel, including mechanics and pilots; modifications to training; incorporation of facilities, including ammunition bunkers and hangars; institutional leadership who are competent in the employment of this new capability; and rules of engagement for employment the aircraft," he said.

Ostrowski's words echoed the course's objective: to develop thoughtful Afghan leaders who can navigate force management processes in the near term and pave the way for those who will lead and improve those processes in the coming years. (See Figure 2.) Working hand in glove, ANDSF and CSTC-A leadership are engaging the students and providing real-world examples that reinforce the principles of sound force management.

CONCLUSION

The desired endpoint for MOI and MOD force managers is to use disciplined systems and processes to identify the capabilities that their forces need so that they can accomplish Afghanistan's national security strategy without relying on international advisers. This force management course is just a critical first step toward enabling our Afghan partners to manage their own force structure. More such efforts will be necessary over the next few years, including additional and more advanced courses, workshops to develop Afghan force management doctrine and more detailed instruction on sustainability and affordability analysis.

During the upcoming CPRs, CDD advisers will reinforce and guide their counterparts in applying what they learned during the course as they develop the next Tashkils. To improve the course and the next cycle of learning, joint working groups will form to capture lessons learned from the CPR process so that our Afghan counterparts can take greater leadership in managing their force structures.

Afghans who have demonstrated a clear grasp of force management and were able to apply the principles during the CPR should be identified to help teach the next force management course with the goal of developing them into lead instructors. This will posture the MOI and MOD to educate their leaders and become self-sufficient as they move toward a secure, stable and peaceful future.

For more information, contact Col. Garrett D. Heath at ***garrett.d.heath.mil@mail.mil****. The work of CDD, CSTC-A and Army acquisition in Afghanistan was the focus of a special section in the April-June 2016 issue of Army AL&T magazine. Find it at* ***http://usaasc.armyalt.com/?iid=138893#folio=148****.*

COL. GARRETT D. HEATH was the CDD director within CSTC-A from July 2015 to July 2016; he's now the Chief of Staff of the Army Senior Fellow with the Institute for Defense Analyses. He holds an M.S. in operations research and systems analysis from the Naval Postgraduate School and a B.S. in electrical engineering from the United States Military Academy at West Point.

LT. STEPHEN E. WEBBER is a U.S. Navy Reserve officer serving in CSTC-A's CDD. He holds an M.A. in security studies from the Georgetown University School of Foreign Service and a B.A. in studies in war and peace from Norwich University.

MS. KRISTY TIERNEY

COMMAND/ORGANIZATION:
Sustainment Contracting Division, Army Contracting Command – Rock Island

TITLE:
Procuring contracting officer

YEARS OF SERVICE IN WORKFORCE: 12

DAWIA CERTIFICATIONS:
Level III in contracting;
Level I in program management

EDUCATION:
MBA, St. Ambrose University;
BBA, University of Iowa

AWARDS: Secretary of the Army Award for Excellence, Sustainment Contracting Division team

'Be a leader regardless of what position you're in'

Like most members of the Army Acquisition Workforce, a desire to give back sparked Kristy Tierney's career. "I wanted a career that had more of a positive impact on the world than simply helping a company improve its bottom line, and I saw public service as a way to do that," she said. "This career allows me to use my business knowledge and skills to be a good steward of taxpayer dollars and to support the warfighters who sacrifice so much for all of us."

She started at the U.S. Army TACOM Life Cycle Management Command at Rock Island, Illinois, in 2004, purchasing chemical and biological monitors, alarms and detectors in the Chemical and Biological Directorate. She stayed with TACOM until 2010, when she moved to the U.S. Army Contracting Command's contracting center at Rock Island (ACC-RI). She has worked in several different divisions within those organizations, including Program Manager Sets, Kits, Outfits and Tools (PM SKOT); Installations; Ammunition; and Enhanced Army Global Logistics Enterprise (EAGLE) and Sustainment. "Each area that I've worked in has given me a new perspective that I was able to apply in some way to each new future position," Tierney said.

She's now the contracting officer for the Army Prepositioned Stock – 5 (APS-5) program in Kuwait and Qatar. The APS-5 program maintains combat-ready equipment and materiel, strategically prepositioned to be used to support warfighter deployments to Southwest Asia in contingency operations. Now in her 13th year in the workforce, Tierney executes and administers the contracts that support the 401st Army Field Support Brigade's mission to receive, repair, maintain, store, prepare for issue and issue APS-5 equipment. It's rewarding to know that her efforts help to ensure that the Soldiers in Southwest Asia always have fully maintained equipment that is ready for issue and use at a moment's notice, Tierney said.

"I'm definitely proud of the work we do every day to help keep the complex APS-5 program in Kuwait and Qatar operating efficiently," she said. "But the add-on-armor effort that I worked on while at PM SKOT at TACOM also stands out in my mind as an accomplishment that I'm particularly proud of."

In 2007, Tierney was one of two contract specialists on a small cross-functional team tasked with equipping newly established add-on-armor sites in Iraq and Afghanistan with the tools required to quickly modify vehicles in theater to make them more resistant to threats, particularly improvised explosive devices. "My team and I successfully utilized the contingency contracting methods available to us to award approximately 20 contracts within one week of becoming aware of the requirements. This required extensive and constant coordination with all stakeholders, and a level of dedication to the mission that I'm proud to have been a part of. It was extremely satisfying to know that my actions had a direct and immediate impact on the safety of our Soldiers in Southwest Asia."

The key to being successful in her role is communication, she said—to be able to properly communicate complicated contracting regulations, laws and policies to contractors, customers and colleagues to ensure mutual understanding.

LEADERS IN ARMY CONTRACTING

Tierney with Maj. Gen. James E. Simpson, ACC's commanding general. (Photos by Liz Greenawalt, ACC-RI Public Affairs)

Communication is also the key to overcoming the biggest challenge she faces in her job—keeping pace with constant change. "The contracts that we manage are performed in theater, which means we operate in a fluid, fast-paced environment. We always have to be prepared to handle changes to the missions," she said. By staying in constant communication with their customers, contracting officers can be as proactive as possible and share lessons learned daily to ensure that they are operating as effectively and efficiently as possible. "I'm very fortunate to have such a great team who are very skilled in their jobs and understand the importance of communication and teamwork."

During her career, she noted, she has worked with many talented people who helped guide her, but the two individuals who have had the most impact are Sean O'Reilly and Chris Dake, whom she met early in her career while working for TACOM. O'Reilly is now a division chief at TACOM – Warren, Michigan, and Dake, a retired Army lieutenant colonel, is the acting division chief of the EAGLE and Sustainment Division at ACC-RI. Tierney worked with both of them in 2006-2007 when she was with PM SKOT at TACOM.

"Mr. O'Reilly believed in my abilities, despite my lack of experience at the time, and tasked me with challenging contract actions so that I could grow and develop my skills, while also providing the support I needed to be successful," said Tierney. "Mr. Dake leads by example and has shown me the importance of integrity, respect, honesty and even humor. He values my knowledge and opinions, and encourages me to be confident and make Tierney's voice heard." Dake is now directly in her chain of command, and they interact daily.

In addition to the required business classes and DAWIA certifications, Tierney noted that the most important way to be successful in contracting "is to obtain a diverse array of on-the-job experience," she said. "Take advantage of opportunities to support a variety of customers, and execute different types of contracts for many different types of supplies and services." She added, "It's also important to be a leader regardless of what position you're in. Always try to recognize and build skills in others, not only to help their careers but also to support and improve the contracting workforce as a whole."

—MS. SUSAN L. FOLLETT

CONTRACTING LOAD GROWS

Contracted longshoremen off-load containers from a ship at Military Ocean Terminal Sunny Point near Wilmington, North Carolina, in March 2015. Since the beginning of this decade, contracted services have become a major component of ASC's logistics capability. (Photos by Sgt. 1st Class Shannon Wright, ASC Public Affairs)

CORRALLING CONTRACTS

Handed sweeping new responsibilities, the U.S. Army Sustainment Command builds services contract management from the ground up.

by Mr. Jerome Jastrab

"The universe never did make sense; I suspect it was built on government contract."
—Robert A. Heinlein

Government contracting is indeed a complicated and, at times, perplexing business. It's an arena governed by the massive Federal Acquisition Regulation, where lack of knowledge and failure to perform due diligence can significantly increase the government's exposure to cost and performance risks. Imagine you're building a house and you ask the general contractor how many subcontracts he had open, which companies held them, what type of work the subcontractors were performing and how he assessed the quality of their work. Now imagine his or her response to those questions is, "I'm not really sure."

That's similar to where the U.S. Army Sustainment Command (ASC) found itself at a command level in October 2010, when the U.S. Army Installation Management Command Directorates of Logistics, now known as Logistics Readiness Centers (LRCs), were placed under operational control of the U.S. Army Materiel Command, ultimately to be reassigned in October 2012. This significantly changed the culture of ASC, as contracted services became a major component of the command's logistics capability. Today ASC has more than 350 service contracts worth nearly $1 billion in annual spending—about half of its budget.

Right after the transition, service contracts were generally decentralized down to the LRC at each installation, and there was no comprehensive command-level oversight and management of the services from a portfolio management perspective. Considered common practice at the time, this structure reflected

FIGURE 1

FIRST, ORGANIZE THE DATA

The Enterprise Requirements Management System (ERMS), ASC Service Requirements Tracking Database (ASRTD) and Services Contract Approval (SCA) Routing systems that the command developed provided the tools it needed to track service contracts, setting the stage to build a team with the skills to use the data effectively. (All graphics courtesy of ASC)

larger issues across the entire DOD. As recently as May 2015, a U.S. Army Audit Agency report stated, "Army leaders had no reliable means of knowing how many service contracts had been awarded for the Army or the value of those contracts." It's not a huge leap to infer from this statement that this lack of visibility brings with it inherent waste, and that opportunities exist to achieve significant savings.

SERVICES CONTRACTING A TEAM SPORT

Instructors at the Defense Acquisition University (DAU) are fond of saying, "Services contracting is a team sport," one that involves all stakeholders. During the initial phase of assuming responsibility for the LRCs, the newly assembled ASC stakeholders were not functioning as a team. Complicating factors included the geographical dispersion of the LRCs and the diversity and geographical dispersion of supporting contracting agencies. Additionally, as several audits have documented, Army commands responsible for the organizations generating the requirements for service contracts had neither the automated tools nor the business skills to take on the task of managing service contracts throughout their life cycle.

With a desire to gain visibility of all service contracts at the command level to enable program management, and considering the lack of an Army enterprise business intelligence tool that could manage this type of information, ASC realized it had to help itself, and help itself fast. The first step was to build an inventory of service contracts, establish processes to review and approve requirements and then create automated tools to support these processes. Historically, DOD had seen service contracts as enablers in fulfilling operational requirements, not as something in their own right, and as a result there were no automation systems in place to track them outside of the contracting community.

ESTABLISHING THE DATABASE

Out of necessity, ASC developed the Enterprise Requirements Management System (ERMS), the ASC Service Requirements Tracking Database (ASRTD) and Services Contract Approval (SCA) Routing. ERMS is an automated tool that facilitates requirements validation and creates a detailed record of services requirements for the current budget year. ASRTD maintains a record of current and closed contracts, creating a historical record connecting contracts to requirements and the forecast life cycle based on programmed periods of performance. SCA Routing is an automated staffing and approval tool to process the request form for services contract approval, which also shares data with ASRTD. (See Figure 1.)

Once ASC was able to track service contracts, leaders wanted to put together a team with the skills to use that data to

As recently as May 2015, a U.S. Army Audit Agency report stated, "Army leaders had no reliable means of knowing how many service contracts had been awarded for the Army or the value of those contracts."

develop efficiencies and control costs. The goal was to develop the business skills needed to review and improve acquisition strategies in coordination with contracting partners, and then ensure contractor performance after a contract was awarded. To develop the requisite skills, ASC established the Installation Logistics Division, a staff element that could actively manage the LRC's service requirements by commodity through the service acquisition life cycle.

ASC also established the Contract Management Office (CMO) to serve as a bridge between the requiring activities and the contracting agencies. In coordination with this action, the Army established the position of portfolio manager for logistics management services in ASC headquarters as part of its horizontal governance structure; that function was also placed in the CMO. With those changes, ASC had the structure in place to initiate continuous improvement in services contract management. (See Figure 2, Page 70.)

One of the first significant efforts at improving the efficiency of service contracts was using a portfolio approach to establish the Enhanced Army Global Logistics Enterprise (EAGLE) basic ordering agreement, a contract vehicle created to set up a single logistics provider for all supply, maintenance and transportation requirements on an Army installation or joint base. (See Figure 3, Page 71.) The acquisition strategy was approved in February 2012, and the first task order was awarded in August 2013.

Following the successful launch of EAGLE, ASC began to focus on improvements in the contract pre-award phase, specifically on standardizing performance work statements (PWSs) and quality assurance surveillance plans (QASPs) for each commodity of

PREPARED TO PRE-POSITION

A contract worker at the Army Strategic Logistics Activity – Charleston (ASLAC), South Carolina, prepares a military vehicle for painting in support of the European Activity Set buildup in June 2015. The equipment is used by troops rotating into Europe for exercises and military-to-military engagements with NATO allies.

MAINTAINING READINESS

Contract workers conduct maintenance on military equipment in June 2015 in support of the European Activity Set at ASLAC, a government-owned, contractor-operated facility that provides maintenance services for the Army's Prepositioned Stocks (APS) program. ASC, which oversees the APS program, has taken steps recently to ensure that Army commands have the tools and the business training to manage service contracts throughout their life cycle.

FIGURE 2

NEXT, ORGANIZE THE TEAM

In addition to ASC's work to stand up these three teams, the Army established the position of portfolio manager for logistics management services in ASC headquarters as part of its horizontal governance structure. Those changes gave ASC the structure and manpower to initiate continuous improvement in services contracts management.

logistics services. ASC sought the support of DAU, using the DAU Services Acquisition Workshop, where instructors facilitate the development of PWSs and QASPs, and use of the DAU Acquisition Requirements Roadmap Tool Suite, a "how-to" guide to effectively managing service requirements—a sort of "Services Acquisition for Dummies"—to develop and refine these products. To further increase competition and productivity and improve market research, ASC also expanded the use of industry days, small business symposiums and advance planning briefings for industry. Finally, to tie all these efforts together, ASC established a business process whereby all service requirements with a total value exceeding $200,000 go to an acquisition strategy review board made up of members of the Senior Executive Service (SES) from ASC and the U.S. Army Contracting Command (ACC). A multifunctional team from the requirements and contracting communities works to develop and present an acquisition strategy to the board for approval.

ASC's most recent initiatives focus on contract post-award activities, primarily monitoring costs and contractor performance. To accomplish this, ASC has begun conducting a quarterly contract management review, or CMR. The CMR is an open forum that allows the ASC commanding general to review the services contract inventory and discuss service contract performance with the headquarters staff, Army field support brigade (AFSB) commanders and supporting commanders and managers from ACC. As part of this review, the activity responsible for each services requirement assesses each contract using cost, schedule and performance metrics.

Subsequently, each AFSB then selects two to three contracts to undergo a "deep dive" review, which the brigades brief to the ASC commanding general. Among other things, this review encompasses surveillance activities by contracting officer's representatives and ratings of contractor performance. The review identifies positive and negative trends to be addressed if necessary, making the command more responsive to situations in which a contract maybe veering off course. Finally, to spread best practices across the command and to identify

Instructors at DAU are fond of saying, "Services contracting is a team sport," one that involves all stakeholders. During the initial phase of assuming responsibility for the LRCs, the newly assembled ASC stakeholders were not functioning as a team.

potential pitfalls, each commander or responsible manager is given the opportunity to share lessons learned with their peers. The CMR is already paying dividends, as it has renewed focus on the importance of post-award surveillance activities and documenting contractor performance throughout the command.

CONCLUSION

As ASC moves forward in an environment where resources are constrained but customers continue to expect the same level and quality of logistics services, the command plans to build on the successes achieved over the past four years. EAGLE will remain one of ASC's largest programs; to date, the program has awarded 30 task orders totaling $1.8 billion—generating a cost savings of 19 percent—and reduced the number of duplicative contracts by 56 percent. ASC plans to complete the remaining 16 EAGLE task orders by FY18 for a total value of approximately $4.5 billion, which will generate additional savings.

Future efforts will focus on driving down costs through better cost analysis and management, following the DOD lead to reduce duplicative contracts through strategic sourcing and continuing to implement Better Buying Power initiatives with future contracts. Contracted services will remain an integral part of the way ASC helps sustain the Army. Improving the business skills to be able to effectively partner with ACC and achieve best value for the government will be critical to continued success.

For more information on the EAGLE program, go to ***http://www.acc.army.mil/contractingcenters/acc_ri/eagle/index.html*** *or email* ***usarmy.ria.asc.list.lce@mail.mil****.*

MR. JEROME JASTRAB is the Army's portfolio manager for logistics management services at ASC, Rock Island Arsenal, Illinois. He holds a master's degree in strategic studies from the U.S. Army War College, a master's in international relations from Troy State University and a bachelor's in industrial technology from the University of Wisconsin – Platteville. He is Level III certified in life cycle logistics and Level I certified in program management.

FIGURE 3

EAGLE HAS LANDED

The EAGLE basic ordering agreement was created to establish a single logistics provider on an Army installation or joint base. To date, the program has awarded 30 task orders totaling $1.8 billion, for a cost savings of 19 percent.

MR. ROBERT DILALLA

COMMAND/ORGANIZATION:
U.S. Army Natick Soldier Research, Development and Engineering Center; U.S. Army Research, Development and Engineering Command

TITLE:
Supervisory general engineer and team leader, Infantry Combat Equipment Team

YEARS OF SERVICE IN WORKFORCE: 13

DAWIA CERTIFICATIONS:
Level III in science and technology management; Level II in program management

EDUCATION:
M.S in engineering management, Tufts University; B.S in mechanical engineering, University of Massachusetts Amherst

AWARDS:
Maj. Gen. Harold "Harry" J. Greene Award for Innovation; Specialty Professional of the Year Award; Greater Boston Federal Executive Board Excellence in Government; Commander's Award for Civilian Service

Thinking differently to keep Soldiers protected

In his 13 years in acquisition, Robert DiLalla has played a big role in keeping Soldiers safe: As an engineer matrixed to the product manager for Soldier protective equipment (PM SPE) in the Program Executive Office (PEO) for Soldier, he supported the procurement of 30,000 Interceptor Body Armor vests in one month, and helped the program manager with the procurement of more than a million sets of Improved Outer Tactical Vests and 150 explosive ordnance disposal suits. He also had a role in introducing female body armor and facilitating the transition of all body armor from the universal camouflage pattern to the operational camouflage pattern.

More recently, he and his team at the U.S. Army Natick Soldier Research, Development and Engineering Center (NSRDEC) developed the Ballistic Combat Shirt (BCS), an integrated armored shirt that offers ballistic protection to the chest, upper arm and neck areas. Unlike tactical or concealable flexible armors fielded to date, the BCS is a comfortable, sized-to-fit athletic-style outer garment that could be worn in place of the current Army Combat Shirt (ACS). It's cooler and lighter than the current Interceptor Body Armor components and the ACS, and it improves range of motion, enhances marksmanship and reduces bulk while maintaining a high level of ballistic protection.

"The greatest satisfaction in being a part of the Army Acquisition Workforce is seeing how the work that we do impacts the Soldier," said DiLalla, supervisory general engineer and team leader for the Infantry Combat Equipment Team (ICET). "Whether it's a knowledge product that influences new requirements, a new test method to better characterize performance or a novel product, it all helps shape the end items that the Soldier uses. Seeing Soldiers wear and use the items we work on is an extremely rewarding feeling."

As the leader for ICET, he manages two groups of scientists and engineers. One group executes Army science and technology projects in ballistic and blast protection, and the other provides matrix support to the Marine Corps Systems Command in procuring protective products, individual clothing and equipment. "ICET plays a critical role in supporting Soldiers and Marines from a science and technology and development and engineering standpoint," DiLalla said. "We have the ability to influence products and systems currently fielded and planned for the next generation."

The BCS was developed through a technology enabled capability demonstration (TECD) focused on force protection for Soldiers and small units, one of five TECDs managed by the U.S. Army Research, Development and Engineering Command, NSRDEC's parent command. For his efforts, DiLalla earned the FY15 Maj. Gen. Harold "Harry" J. Greene Award for Innovation in the individual civilian category. (See "Honoring Innovation," Page 82.)

In developing the BCS, researchers thought of the Soldier as a mobile weapon system and collaborated with nontraditional sources of armor, including the athletic apparel industry. The result was a design that resembles something a hockey or football player might wear.

DiLalla wants to see that kind of unconventional thinking take root. "As team leader, I want to encourage the great minds on my team to think outside the box. I want them to know that they are capable of doing something novel and revolutionary," he said.

He has his dad to thank for getting him started in a military career. "While I was an engineering student [in college], my father—who is an Army veteran—told me about an Army laboratory in Natick, Massachusetts, that developed all sorts of cutting-edge technology. Intrigued by what he told me, I found a website, called the base number and found out that there were job opportunities for students." One month later, he was working at NSRDEC.

"I got to experience what the Army Acquisition Workforce was all about, and I thought it was cool that all of these engineers and scientists were working on new technologies that one day could benefit Soldiers," he said. "I knew from that point on I wanted to work for the Army upon graduation." He spent one more summer at NSRDEC before being hired full time in 2003.

He noted that his work for PM SPE, from 2008 to 2012, "was one of the most profound experiences in my career. I was working on items that were literally being developed, procured and immediately fielded to Soldiers deploying to Operation Enduring Freedom and Operation Iraqi Freedom."

He was involved with all technical aspects of the acquisition development life cycle for both the Interceptor Body Armor and the Soldier Protection System programs. "I got to experience firsthand what I had learned through my acquisition training."

He also noted the contribution of two mentors. "Ken Ryan, chief of the Warfighter Protection Branch, is my current supervisor and was also the first engineer I worked for fresh out of school. He has taught me over the years how to become a better engineer and civil servant. Without a doubt, I wouldn't be the engineer or manager I am today without the support he has provided to me over my career."

PROGRESS IN PROTECTIVE GEAR
DiLalla shows how a Soldier would wear the Ballistic Combat Shirt for lightweight ballistic protection to the chest, upper arm and neck areas. The armored garment is designed as an alternative to the current Army Combat Shirt. (U.S. Army photo by David Kamm, NSRDEC)

He added, "I also have to mention Lt. Col. Craig Fournier, who empowered me to think out of the box and allowed me the flexibility to pursue new, innovative ideas. He also taught me a lot about the uniformed side of the Army." Fournier is currently the product manager for petroleum and water systems in the PEO for Combat Support and Combat Service Support. "During the first five years that I worked for the Army, I didn't really work directly with anyone in uniform," DiLalla said. Fournier "took the time to teach me a lot about Army command structure, staff functions, etc. In addition, he was a scientist who previously had worked at NASA as a contractor. He was a problem-solver and a good manager."

—MS. SUSAN L. FOLLETT

ARMY RESEARCHERS *DEVELOPING ZIKA VACCINE*

BREEDING TEST SUBJECTS
The Aedes aegypti mosquito, which transmits the Zika virus, is reared by the thousands at WRAIR for use in preclinical Zika vaccine experiments and research. (Photos by Jonathan Thompson, WRAIR Medical Audio Visual)

INFECTION TIME
Uninfected Ae. aegypti, the main transmitters of the Zika, dengue and chikungunya viruses, are transported in pint containers from WRAIR's main insectary to specialized laboratories to be infected with the Zika virus.

Harvard and Walter Reed scientists collaborate in an effort to protect humans from the mosquito-borne virus.

by Col. (Dr.) Nelson L. Michael and Col. (Dr.) Stephen J. Thomas

Researchers at Walter Reed Army Institute of Research (WRAIR) in Silver Spring, Maryland, moved quickly to develop and begin testing a Zika vaccine candidate early this year. The fast-moving virus, which is transmitted by infected mosquitos and through sexual contact, alarmed the world as it spread through South and Central America, causing serious birth defects. A preclinical study published June 28 in the journal Nature indicated the feasibility of a vaccine to prevent Zika infection in humans. The study was completed by WRAIR and collaborators at the Beth Israel Deaconess Medical Center at Harvard Medical School.

The WRAIR and Harvard teams are now testing this vaccine in a second preclinical model. If everything goes well, the plan is to start human testing later this year. On July 6, WRAIR announced a cooperative research and development agreement with Sanofi Pasteur to transfer its vaccine technology to the pharmaceutical company to explore advanced and larger-scale manufacturing and production.

"The Army has an interest in supporting development of countermeasures against Zika," said Dr. George V. Ludwig, acting principal assistant for research and technology for the U.S. Army Medical Research and Materiel

ZEROING IN ON ZIKA
Russell A. Olson, Viral Vaccines Section head at WRAIR, examines cell cultures for the Zika virus.

Command. "Infectious diseases have traditionally been the greatest threat to Soldier health and readiness, both in the field and in the garrison. … Similarly, it's also important to support the health and welfare of our Soldier-dependent population here in the United States by finding ways to protect them from this emerging disease."

Aedes aegypti mosquitoes, in addition to transmitting Zika virus, are responsible for spreading the dengue, yellow fever and chikungunya viruses. These mosquitoes, and the viruses they carry, have been expanding their geographic reach. Until last year, Zika was limited to the tropics of the Indian Ocean basin and the South Pacific. The wide range of Ae. aegypti and its ability to breed anywhere there is even a tiny amount of stagnant water makes infestation hard to control. That's why prevention strategies are needed that are directed at the mosquito as well as the human host.

Although Zika manifests clinically in only 20 percent of those infected and generally causes a mild disease of self-limited fever and muscle or joint pain, the virus can cause neurologic disease and death in developing fetuses. Zika virus is also unique among mosquito-borne diseases in that it can be transmitted through sexual contact.

However, a vaccine that limits the amount of virus in the blood will likely prevent transfer of the virus from mother to child or between sexual partners and interrupt transmission within at-risk populations.

The Zika virus disease was originally discovered in 1947, in the Zika Forest of Uganda. Dr. Alexander J. Haddow was the first to study the virus after a rhesus monkey developed a fever from the bite of an Ae. africanus mosquito.

His grandson, Dr. Andrew D. Haddow, followed in his footsteps to become a virologist at the U.S. Army Medical Research Institute of Infectious Diseases, where he also studies the disease on the other half of the research spectrum—basic research. He and his colleagues are doing the work that lays the foundation for understanding the virus.

"Everyone here understands the gravity of the situation, and the impact that our work will make for not only our service members but also populations around the globe," said Haddow. "Our No. 1 goal is to move good science forward as rapidly as possible."

For more information, go to the Walter Reed Army Institute of Research website ***http://wrair-www.army.mil/****.*

COL. (DR.) NELSON L. MICHAEL earned his M.D. and Ph.D. from Stanford University and graduated summa cum laude from the University of California, Los Angeles with a degree in biology. He also trained in internal medicine at Harvard University.

COL. (DR.) STEPHEN J. THOMAS earned his M.D. from Albany Medical College and a B.A. with honors in biomedical ethics from Brown University.

TARGET SIGHTED

A test officer from PEO Soldier evaluates a thermal weapon sight in an environmental test chamber on WSMR. A recent effort by PEO Soldier's product manager for Soldier maneuver sensors (PM SMS) took a collaborative approach among vendors to ensure that weapon sight components interoperate more effectively. (Photo by Drew Hamilton, WSMR Public Affairs)

COMPETITION *MEETS* COLLABORATION

Vendors share prototypes for weapon sights in a new mix-and-match approach to building interoperability into integrated Soldier systems for the best overall performance at the best overall price.

by Maj. Nicholas Breen

On a warm, dusty afternoon at White Sands Missile Range (WSMR), New Mexico, in May 2016, engineers from two competing vendors for the Family of Weapons Sights – Individual (FWS-I) program took the unusual step of swapping their prototypes and discussing the technical merits of each other's approach to the program. This level of collaboration between competing vendors is highly unorthodox in the fiercely competitive world of defense procurement, yet it was the approach taken by BAE Systems of Nashua, New Hampshire, and DRS Technologies of Dallas. According to Lt. Col. (P) Timothy Fuller, then the product manager for Soldier maneuver sensors (PM SMS), "Interoperability ensures that any combination of vendor systems can be procured and fielded to the Soldier."

The FWS-I will be the smallest, lightest and most capable thermal weapon sight in the Army inventory. Beyond its significant improvement over the legacy thermal weapon sight (TWS) program in size, weight and power, what is truly unprecedented is that this targeting device can pair wirelessly with the Soldier's thermal-capable maneuver sensor in the form of the Enhanced Night Vision Goggle III (ENVG III). Wirelessly linking an individual Soldier's maneuver sensor and targeting sensor finally provides the light

infantry fighter a battlefield capability that our mechanized and armored forces have enjoyed for years.

The wireless connection provides improved situational awareness and increases Soldiers' lethality and survivability by enabling them to aim and shoot at an enemy without having to transition from maneuver optics (ENVG) to target acquisition optics (FWS-I). The system software and wireless communication allow Soldiers to scan the environment and accurately engage the enemy without shouldering the weapon or using a laser pointing device, which can compromise a Soldier's position during the critical moments in an engagement when shots are first fired. The passive targeting capability, known as rapid target acquisition (RTA), functions when the ENVG III and FWS-I are wirelessly paired with one another but not when these systems are used alone.

"We have found, sometimes the hard way, that it is far better to work out interoperability and system integration problems early in the acquisition process. That is the path we are taking," said Timothy Goddette, deputy program executive officer in the Program Executive Office (PEO) for Soldier.

Goddette's comment echoes a prominent subtheme of acquisition reform. Both the House and Senate versions of the National Defense Authorization Act for Fiscal Year 2017, in different ways, call for greater interoperability in a variety of contexts within and between the services. The two chambers are now reconciling the differences between their two versions of the bill to arrive at compromise legislation.

ESTABLISHED SYSTEMS, NEW APPROACH

Development of this new RTA technology and increased capability required management of the programmatic risks and potential complications that often arise as technologies are integrated into something new. Thermal sensors, which were first fielded to infantry Soldiers in 1998 with the AN/PAS-13, have significant tactical advantages compared with standard light-intensification night vision technology, as they sense heat generated by personnel and equipment and can detect targets through smoke, dust, fog and other obscurants. Night vision technology has been in the Army inventory even longer than the AN/PAS-13, going back to the first passive starlight scopes fielded in the 1960s. The first ENVG, which fused thermal and light intensification technology, was introduced in 2007.

The FWS-I now uses a wireless link to combine these technologies and make them even more lethal with the addition of RTA.

To reduce programmatic risk, PM SMS decided to bring two vendors on to the program not only for the engineering and manufacturing development (EMD) effort but throughout the life of the program. PM SMS, which is assigned to PEO Soldier's project manager for Soldier sensors and lasers (PM SSL), has used this approach in past programs during the production phase to introduce price competition and to ensure sustained system deliveries should one vendor experience problems manufacturing these highly technical, difficult-to-produce electro-optic systems.

"Interoperability provides greater flexibility to the Army as well as increased opportunity to the industrial base," said Fuller. "Cross-vendor interoperability provides the RTA capability to the Army while allowing the vendors opportunities to win awards on the FWS-I or ENVG III." In other words, vendors are no

SEAMLESS PAIR

RTA technology functions when ENVG III and FWS-I pair wirelessly, and enables Soldiers to quickly locate and engage targets from any location without shouldering their weapon. PM SMS worked with BAE Systems and DRS Technologies to make sure that components created by one company paired seamlessly with those made by the other. (Image courtesy of PEO Soldier)

ALL EYES

By pairing ENVG III and FWS-I, Soldiers no longer need to switch between night vision goggles and weapon-mounted thermal sights when acquiring or engaging threats, improving safety and mission effectiveness. The vendor collaboration that made that interoperability possible required a lot of legwork on the part of PM SMS to develop a way forward that benefited vendors as well as warfighters. (Image courtesy of PEO Soldier)

"Be proactive and upfront in defining the requirements, and involve the suppliers in the process. Describe what success looks like and the resulting benefits to the warfighter."

longer tied to a winner-take-all approach on the FWS-I and ENVG III in order to provide the RTA capability that the Army desires. If one vendor provides better performance and a better price for one part of a system while another vendor provides a superior version of a different part, interoperability means the Army is not restricted to buying complete sets from one vendor or the other. It can buy what is best, and then mix and match to provide Soldiers with superior complete systems at the best possible price.

The FWS-I's interoperability effort in EMD ensured that the weapon sight produced by one manufacturer would wirelessly transmit an image and work with another manufacturer's ENVG. FWS-I is setting a new standard across the Army for partnering with industry and cross-collaboration among competing vendors. This will ensure that the total program will be fieldable, trainable, supportable and seamless to use, regardless of which vendors receive the awards for individual systems. This level of collaboration between competitors is new ground in defense acquisition that has great potential to grow in the coming years.

JUST A FIRST STEP

As the Army continues to invest in the individual Soldier's lethality, communication and navigation capabilities on a digital platform, multiple vendors will need to figure out how to come together with a PM shop to provide solutions that allow their hardware to work together in order to provide a whole new capability. FWS-I is just the tip of the iceberg. More of this type of collaborative effort will be

seen when efforts like the Intra Soldier Wireless and Integrated Soldier Sensor System begin to come online.

Achieving robust interoperability meant a great deal more than simply writing a requirement for interoperability. It involved full participation of PM SMS, as well as resources and support for the testing and development necessary to achieve the goal. PM SMS provided funding for testing and development of interoperability as part of the FWS-I program.

"Interoperability must be incorporated early in the system integration effort," said Dean Kissinger, technology lead for the FWS-I team. "Trying to retrofit systems to achieve interoperability would have introduced significant risk and cost to the program." Consequently, PM SMS began planning early in the process.

The government team drafted an initial interface control document (ICD), which established a baseline for coordination between the government and vendor teams. "Our initial ICD was generic in some parts, allowing vendor-specific technical solutions to be added when the time was right," Kissinger said. "This approach enabled early collaboration with the vendors to complete the document. We then facilitated the integration effort to ensure that the vendors' hardware was able to communicate with each other and be compliant with the ICD."

CHALLENGING OLD HABITS

Partnering with competitors in writing the ICD wasn't a typical process for the vendors. And while both vendors individually welcomed the idea of being involved, it took some time and effort for all parties to feel comfortable with the approach. Meetings held in spring and summer 2015 took the ICD from concept to reality. Vendors were invited to the competitor's facilities for engineering working group sessions that slowly hammered out a plan.

"The government team had to earn the trust of both suppliers and facilitate the discussions so that we all felt comfortable sharing the level of detail required to be successful," said Joe Tiano, program director for BAE. As this was the first time either vendor had been asked to work with a direct competitor, Tiano said, "Our expectations were low going into the effort because of the concerns with protecting intellectual property [IP] and being careful not to provide a competitive advantage."

Tony Bacarella, senior director and dismounted portfolio leader for DRS, shared the same concerns. "It took a lot of effort on the part of the government to deliberately manage the process and provide DRS a level of comfort that they were able to facilitate the discussions while being sensitive to DRS's IP concerns," Bacarella said.

The meetings culminated in an operational excursion to WSMR in May. For the very first time, representatives from both vendors and the government team witnessed the results of their labor in a cross-vendor operational environment. PM SMS put the systems in the hands of Soldiers and had them run missions in

HANDS-ON TECH

ENVG III and FWS-I provide dismounted Soldiers with an integrated thermal targeting system to illuminate the night. PM SMS's work to wirelessly link the Soldier's maneuver sensor in the ENVG and the targeting sensor in the FWS gives the light fighter a battlefield capability previously available only to mechanized and armored forces. (Image courtesy of PEO Soldier)

FWS-I is setting a new standard across the Army for partnering with industry and cross-collaboration among competing vendors.

which the ENVG III and FWS-I from the different vendors were linked directly in the same environment. After every mission, Soldiers were asked if they could tell the difference between using pieces of equipment that came from the same vendor and using paired equipment from different vendors. The PM SMS team knew that their work had paid off when the Soldiers' feedback indicated that they couldn't tell the difference.

Leading up to the operational excursion at WSMR, Kissinger assumed responsibility for figuring out a new test methodology for this process, in close collaboration with both vendors. "The interoperability effort presented a unique challenge to the government team in terms of establishing requirements and structuring a test and evaluation plan for the interoperable system configurations," he said. Coordination with both vendors was key to ensuring that all parties were in agreement regarding the established test methodology and procedures.

The government facilitated and performed all test events and included early software integration assessments during development of the interoperable systems. Testing of the final deliverable hardware included functional verification performed by PM SMS, laboratory characterization performed by the Night Vision and Electronic Sensors Directorate (NVESD), and an operational assessment performed by the U.S. Army Test and Evaluation Command with Soldiers from NVESD, an element of the U.S. Army Communications-Electronics Research, Development and Engineering Center. "It was crucial to have the program office actively functioning as an engaged intermediary throughout the whole process," said Bacarella.

Tiano offered a final piece of advice to any program offices working in a similar situation. "Be proactive and upfront in defining the requirements, and involve the suppliers in the process. Describe what success looks like and the resulting benefits to the warfighter. Clearly define the test requirements to prove hardware interoperability."

CONCLUSION

PEO Soldier had taken earlier steps, as well, to address the challenge of integrating Soldiers' clothing, helmets, body armor, weapons, night vision and other equipment with the 2015 establishment of a product director for Soldier systems and integration, to ensure that the clothing and equipment developed by different project managers could work together. PEO Soldier created working groups to bring together members of different project management offices, enhancing coordination. "This came about partly because of our continuing effort to provide new and more powerful capabilities for the Soldier, and partly because of our focus on integration and lightening the Soldier's load," said Lt. Col. Anthony E. Douglas, the current PM SMS.

By looking at integration and interoperability earlier in the acquisition process, PEO Soldier is stepping up its game on second- and third-order integration with weapons, body armor and helmets. Soldiers already mount night vision devices on their helmets, and put weapon sights and aiming lasers on their weapons. Technology is opening many new possibilities for equipment to communicate and work together.

The acquisition process will continue to adapt to meet Soldiers' and taxpayers' needs, but we, as acquisition professionals, often are unsure how those reforms translate to the individual program level. The task for us is to find ways to meet those needs by trying to streamline processes and existing requirements in innovative ways that make sense and save the taxpayers money.

For more information, contact the PEO Soldier Public Affairs Office at 703-704-2802 or go to ***http://www.peosoldier.army.mil/feedback/contactForm.asp?type=general****. Or go to the websites of the PM SSL at* ***http://www.peosoldier.army.mil/programs/pmssl/*** *and the product director for Soldier systems and integration at* ***http://www.peosoldier.army.mil/programs/pmswar/****.*

MAJ. NICHOLAS BREEN, until recently the assistant product manager for FWS-I at PEO Soldier, Fort Belvoir, Virginia, is now a portfolio manager in the Office of the Deputy Assistant Secretary of the Army for Plans, Programs and Resources at the Pentagon. He has an M.A. in liberal arts from Johns Hopkins University and a B.S. in political science from the University of Nebraska at Kearney. He is Level II certified in program management.

FROM THE HEAD TO THE HANDHELD

Sgt. Dustin N. Heath, assigned to the 155th Infantry Regiment of the Mississippi National Guard, wears MILES gear as he pulls security during a multi-echelon integrated brigade training exercise in June at Fort Hood, Texas. MILES is a training system that provides a realistic battlefield environment and tactical engagement simulation for direct-fire, force-on-force training. The MILES Laser Tag Utility app enables Soldiers training with the system to test, configure and troubleshoot their equipment. (Mississippi National Guard photo by Sgt. DeUndra Brown, 102nd Mobile Public Affairs Detachment)

HONORING INNOVATION

The bottom line for winners of the Maj. Gen. Harold "Harry" J. Greene Award: Support the Soldier.

by Mr. Brian Beall

A lifesaving medical device, a mobile app that improves Soldier training and a ballistic combat shirt that increases Soldier performance and survivability earned the inaugural Maj. Gen. Harold "Harry" J. Greene Award for Innovation.

Reflecting on the Army's drive to improve Soldier capabilities in current and future conflicts, Gen. Dennis L. Via, commanding general of U.S. Army Materiel Command (AMC), said these awards recognize "solutions that increase efficiencies, strengthen our position and ultimately save lives on the battlefield."

"We are proud to honor Maj. Gen. Greene with a culture that fosters creative research and aims to empower, unburden and protect the nation's warfighter," said Via. On March 16, Via hosted a ceremony for Greene's widow, Dr. Susan R. Myers, at the Association of the United States Army Global Force Symposium and Exposition in Huntsville, Alabama, to announce the new award and memorialize Greene's contributions to research, development and cutting-edge warfighter capabilities during his 34 years of service to the Army.

The Maj. Gen. Harold "Harry" J. Greene Award for Innovation recognizes three categories for innovation fielded in a particular fiscal year: group, individual – military and individual – civilian.

The FY15 winners are:

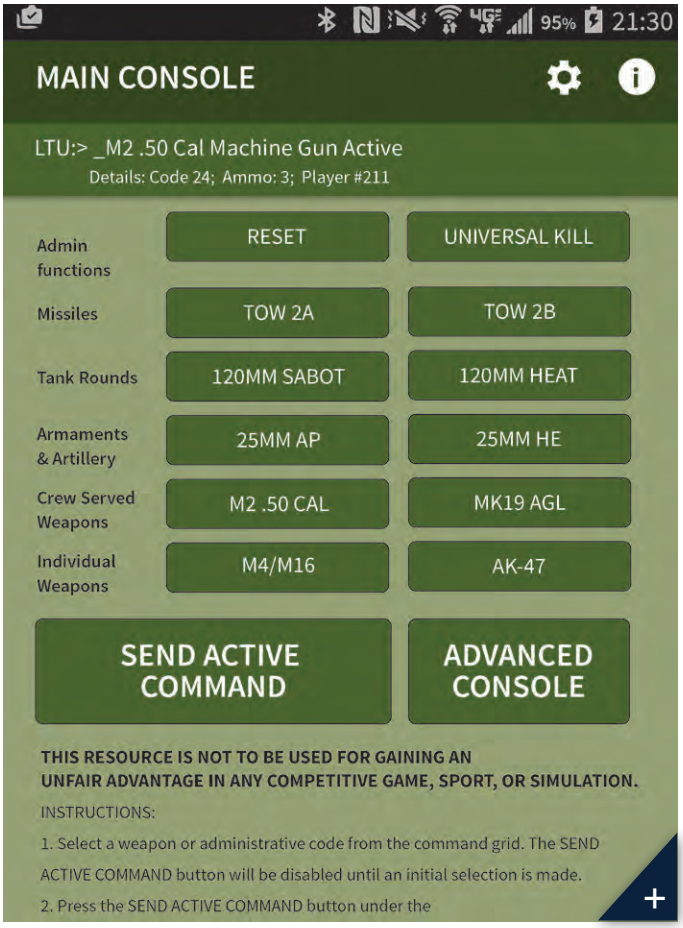
- **Group:** The SAM Junctional Tourniquet, developed at the U.S. Army Institute of Surgical Research, Joint Base San Antonio, Texas. Team members include Dr. John F. Kragh Jr., Dr. Michael A. Dubick, Col. (Dr.) Lorne H. Blackbourne, Dr. James E. Johnson, Col. (Dr.) Lance E. Cordoni and Lance Hopman.

- **Individual – military:** Capt. Lawrence T. Collins for the MILES Laser Tag Utility app, developed at the U.S. Army Corps of Engineers Mississippi Valley Division, Vicksburg, Mississippi.

- **Individual – civilian:** Robert DiLalla for the Ballistic Combat Shirt, developed at the U.S. Army Natick Soldier Research, Development and Engineering Center (NSRDEC), Natick, Massachusetts.

The innovation award revitalized the Army's Greatest Invention Program to honor Greene, who served in several leadership positions across the Army's research, development and acquisition enterprise before he was killed in Afghanistan in August 2014 while serving as the deputy commanding general of the Combined Security Transition Command – Afghanistan.

Greene was a proponent of technologies that could give Soldiers the advantage in battle, notably when he was deputy commanding general of the U.S. Army Research, Development and Engineering Command and simultaneously senior commander of NSRDEC from May 2009 to May 2011.



MILES, AHEAD
The MILES Laser Tag Utility app, shown in this screen shot, is available from the Google Play store. Capt. Lawrence T. Collins developed it to provide a capability he found missing during exercises at the National Training Center. (U.S. Army photo)

WINNING CAPABILITIES

Each of the award-winning projects for FY15 brought together experts, materials and processes to develop Army-centric applications that have proven successful in the commercial world.

MILES Laser Tag Utility app: Individual – military category winner Capt. Lawrence T. Collins, a project engineer who has been with the Army Corps of Engineers' New Orleans District since May 2015, said his formula for innovation included self-taught skills in programming smartphone apps and the need to fulfill a training capability gap. He recognized the gap during his time at the National Training Center at Fort Irwin, California.

Collins created the app to give Soldiers who were training with MILES—the Multiple Integrated Laser Engagement System—the ability to test, configure and troubleshoot their equipment. The MILES Laser Tag Utility app can be downloaded from the Google Play store and, using the infrared port on certain Android-based smartphones, requires no additional hardware or wireless signal connection.

In a statement commending Collins' creation, Maj. Gen. Michael C. Wehr, commanding general of the Army Corps of Engineers Mississippi Valley Division, said, "Having been a platoon leader in the opposing force at the National Training Center for 28 months, I and other leaders understand the utility of this capability." Wehr said teams at combat training centers using the MILES Laser Tag Utility app can "utilize downtime more effectively."

Ballistic Combat Shirt: Individual – civilian winner Robert DiLalla leveraged multiple components across the Army's research and development programs to develop the new combat shirt. DiLalla is a supervisory general engineer at NSRDEC and leader of the Infantry Combat Equipment Team. (See Faces of the Force, Page 72.)

During peak deployments to Iraq and Afghanistan in support of Operation Iraqi Freedom and Operation Enduring Freedom, Soldiers' protective gear expanded in number of parts and in weight. In FY12, NSRDEC engaged in a deliberate science and technology initiative intended to revolutionize body armor architecture and thus enhance Soldier performance and survivability. With the support of the Program Executive Office for Soldier since 2014, DiLalla and a team of scientists and engineers integrated more than four types of high-performance materials created through research by the athletic apparel industry and the Army to produce the Ballistic Combat Shirt.

In a statement endorsing DiLalla's efforts, NSRDEC Director Douglas A. Tamilio said the Ballistic Combat Shirt "significantly increases the protection and flexibility of our personal protective ensemble, ensuring we are giving our Soldiers the edge they need." The Ballistic Combat Shirt will be part of the Army's Torso and Extremities Protection system, slated for fielding in 2019, which incorporates lightweight materials such as polyethylene—a type of plastic—instead of heavier Kevlar for lower-risk missions.

Greene was a proponent of technologies that could give Soldiers the advantage in battle, notably when he was deputy commanding general of the U.S. Army Research, Development and Engineering Command and simultaneously senior commander of NSRDEC from May 2009 to May 2011.

SURVIVABILITY GOES MORE MOBILE

The Ballistic Combat Shirt, which provides Soldiers with better range of motion, less bulk and increased mobility, is the result of NSRDEC research using various high-performance materials created through athletic apparel industry and Army efforts. NSRDEC undertook the research in response to an increase in the weight and complexity of Soldiers' battlefield protective gear. (U.S. Army photo courtesy of PEO Soldier)

SAM Junctional Tourniquet: The winning submission in the group category was designed by a team from the Army Institute of Surgical Research. The device was conceived through partnerships with the U.S. Army Medical Research and Materiel Command, the U.S. Army Medical Department Center and School, Wake Forest University, and SAM Medical Products, driven by data on recurring problems for medics responding to combat trauma.

"Hemorrhage remains the leading cause of death among combat casualties in conventional warfare," said Dr. John F. Kragh Jr., an orthopedic surgeon and researcher at the institute. Kragh, a retired Army colonel who served for 30 years and returned to Army medicine as a civilian, brought together a multidisciplinary team of experts to develop the tourniquet. In a case report of its first use on the battlefield, in January 2014, the team described the basis for developing the tourniquet. It was the story of Sgt. 1st Class Kurt Schmid, a special operations forces medic who tried every means available to him to save the life of Cpl. Jamie Smith, but could not, after Smith was wounded on the streets of Mogadishu, Somalia. The story became part of the book and movie "Black Hawk Down," and the experience led Kragh and

GOING AGAINST THE FLOW

The SAM Junctional Tourniquet, being fielded by the U.S. Army Medical Materiel Agency (USAMMA), is designed to save warfighters from bleeding to death on the battlefield. Led by a team based at the U.S. Army Institute of Surgical Research, the junctional tourniquet allows medical personnel to stop bleeding in the groin or armpit area, where they cannot use the Combat Application Tourniquet. The tourniquet can be positioned in about 60 seconds—a crucial factor for combat medics who only have minutes to save the life of a fellow warfighter who is hemorrhaging. (Photo by Ellen Crown, USAMMA Public Affairs)

his team to focus on creating a tourniquet that could "work for the Cpl. Smiths of the world," in the words of Kragh, while providing caregivers a quick, efficient tool to address battlefield wounds.

In January 2014, an Afghan National Army soldier was shot in the upper thigh in a village in Afghanistan and later transferred to the Afghan side of the Combined United States – Afghan National Army Aid Station for further treatment. Following repeated attempts to stop the bleeding from the soldier's wound, U.S. Army medics applied the SAM Junctional Tourniquet in under three minutes, ultimately saving the soldier, who then was able to receive numerous blood transfusions and treatment at an Afghan hospital.

Kragh and his team anticipate that including the SAM Junctional Tourniquet in the Army Forward Resuscitative and Surgical Team's kit will improve survival rates. Kragh's team cited a study of combat casualty care from 2001 to 2011 during the wars in Iraq and Afghanistan to emphasize that of the preventable deaths, 19.2 percent were the result of junctional wounds. Kragh said the team's focus is on that group and that it will continue to monitor battlefield casualty statistics.

Patrick O'Neill, chief technology officer for AMC, which initiated the award program on behalf of the Army, said all three winning submissions embody the strategic and tactical thinking that Greene applied to the Army's materiel development and procurement programs.

"The 2015 winners of the Maj. Gen. Harold 'Harry' J. Greene Award for Innovation are truly representative of the diverse research and development efforts taking place across the Army in support of the Soldier," he said. "This award honors those innovative ideas and the Army Soldiers and civilians who work tirelessly to ensure that Soldiers are better protected and more capable, and it stands as a reminder to our workforce that their efforts save lives and improve Army readiness for today, tomorrow and the future."

Future Greene awards will recognize Soldiers and civilians who contribute to Army science, technology, research and development, and whose efforts foster innovation and excellence throughout the materiel enterprise.

The nomination window for the FY16 Maj. Gen. Harold "Harry" J. Greene Award for Innovation opened Sept. 15 and closes Dec. 15.

For more information, go to ***http://www.amc.army.mil/amc/agiap.html****.*

MR. BRIAN BEALL is an analyst supporting AMC's chief technology officer for basic research for BRTRC Federal Solutions. Within the Chief Technology Office, he supports AMC's Maj. Gen. Harold "Harry" J. Greene Award for Innovation and the Army Innovation Campaign. He has an international MBA from the University of Memphis and a B.A. in foreign languages for commerce from the University of North Alabama.

EVENT SCHEDULE

FY17

CHESS 101 Briefing

Provides a program overview including detailed information about our Hardware, Software, and Services contracts. Get additional information about the License Tracker for Software (LTS), the Request For (RF) Process, Statements of Non-Availability, and much more!

CHESS IT e-mart Tutorial

The CHESS IT e-mart Tutorial will walk you through the basic capabilities, functions and features of the CHESS IT e-mart for better user experience and efficiency.

RF Process & Reverse Auction Tutorial

The RF Process & Reverse Auction Tutorial will walk you through how to use the CHESS RF Process Tool to submit Requests for Quotes (RFQ) – Hardware/Software, Requests for Proposals (RFP) – Services, Requests for Information (RFI) – market research, and how to develop a Reverse Auction (RA), the CHESS IT e-mart's newest capability.

Date	Event	Location
13-Oct-16	RF Process Tutorial	DCS*
17-Nov-16	CHESS IT e-mart Tutorial	DCS
15-Dec-16	CHESS 101 Briefing	DCS
19-Jan-17	RF Process Tutorial	DCS
16-Feb-17	CHESS IT e-mart Tutorial	DCS
16-Mar-17	CHESS 101 Briefing	DCS
13-Apr-17	RF Process Tutorial	DCS
18-May-17	CHESS IT e-mart Tutorial	DCS
15-Jun-17	CHESS 101 Briefing	DCS
13-Jul-17	RF Process Tutorial	DCS
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ATOM-LEVEL POWER
Pyroelectric materials produce energy at the atomic level when they are heated or cooled. (Image by zoom-zoom/iStock)

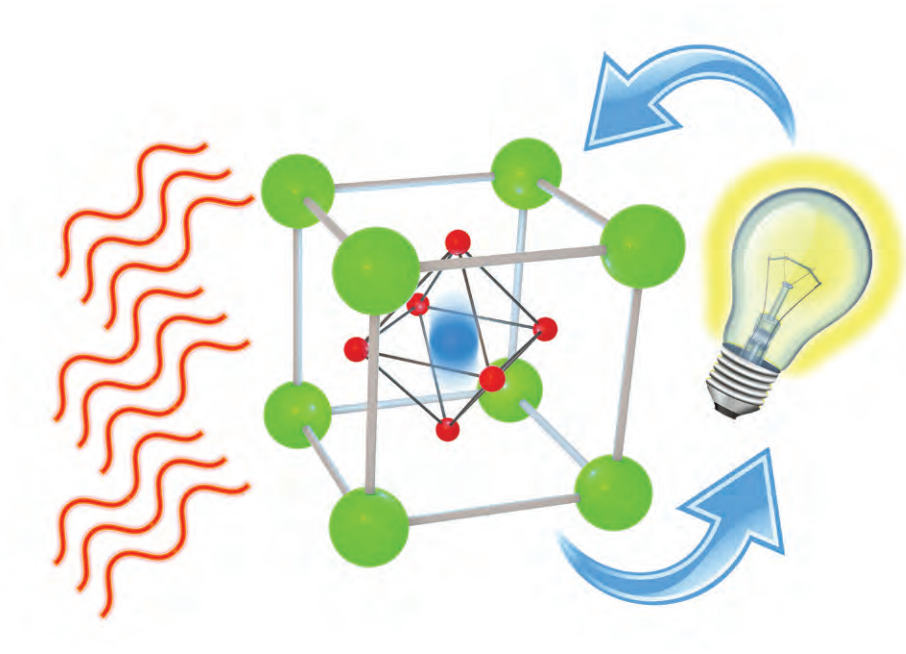
TECHNICALLY SPEAKING

CRYSTAL HEAT

An atomic engine that has all of the power but none of the moving parts.

by Dr. Brendan Hanrahan

What if atomic crystals could send pulse power to light up a room?



THE ATOMIC ENGINE

Heat causes motion of the asymmetric atom (blue) in the pyroelectric crystal, which is converted to electrical power in a repeating process. (Illustration by Eric Proctor, ARL)

Back in 314 B.C., a student of Socrates described bits of sawdust that gravitated to a stone thrown into a campfire. What was an oddity then might be a solution as technology comes of age.

In 1946, more than 17,000 vacuum tubes clicked away in a crowded room and 20 seconds later, ENIAC—the Electronic Numerical Integrator And Computer—had calculated the trajectory of an artillery shell for the Ballistics Research Laboratory, predecessor to the U.S. Army Research Laboratory (ARL). Attendees got to keep a printout as a keepsake. Exciting! The following year, John Bardeen, Walter Brattain and William Shockley would invent the semiconductor transistor. The properties of the semiconductor material accomplished many of the same tasks of the vacuum tube machine, which marked the beginning of the end for vacuum tube-based systems. A material replaced a machine.

In my research, what I'd like to know is which pyroelectric material is the one that will have the best chance of success in practical use for the Army. In general terms, an engine's job is to convert one form of energy into another. This process is described in thermodynamics (the study of heat, energy and work). Why is this important? Because more than 75 percent of the electricity production around the world starts with heat. For example, a coal-fired power plant burns coal to create steam, which in turn drives a turbine.

We're all familiar with the internal combustion engines that power our cars. Energy conversion begins with the piston in your car quickly compressing the air in the cylinder. Adding gasoline and a spark creates combustion, causing a quick pressure rise. Pressure pushes on the piston, which spins the crankshaft, eventually transferring energy to the wheels. The piston comes back up in the cylinder and we're ready to start all over again. That process doesn't just convert energy into motion, it also converts energy into heat, nearly all of which is wasted.

What if these same processes could be accomplished with less waste on the atomic scale, mimicking pistons with atoms? How could we exploit the technology?

CRYSTAL CLEAR

These crystalline materials are made up of an ordered arrangement of atoms. Some atoms have a positive charge and some a negative charge. The pyroelectric materials look like a box of atoms with a single atom that is almost, but not quite, in the center. That means that the charge is more positive on one side or another. However, when you heat the material, the atom that was slightly offset centers itself to form an evenly charged surface. The asymmetry caused by the material's polarization, or internal electric field, causes the electric charge on the surface to change when the polarization changes as the material is heated or cooled.

In the 1700s and 1800s, a number of today's legendary scientists explored pyroelectric properties: Carl Linnaeus, who created the two-name system we use to classify animals, plants and minerals; Joseph Priestly, who discovered oxygen; and Pierre and Marie Curie, who were credited with advances in radiation, magnetism and crystallography.

It was not until later that pyroelectrics were considered for everyday use. Nowadays, pyroelectrics are used primarily in home security systems, where infrared radiation is absorbed by the pyroelectric material, which enables motion detection.

CHARGE IT

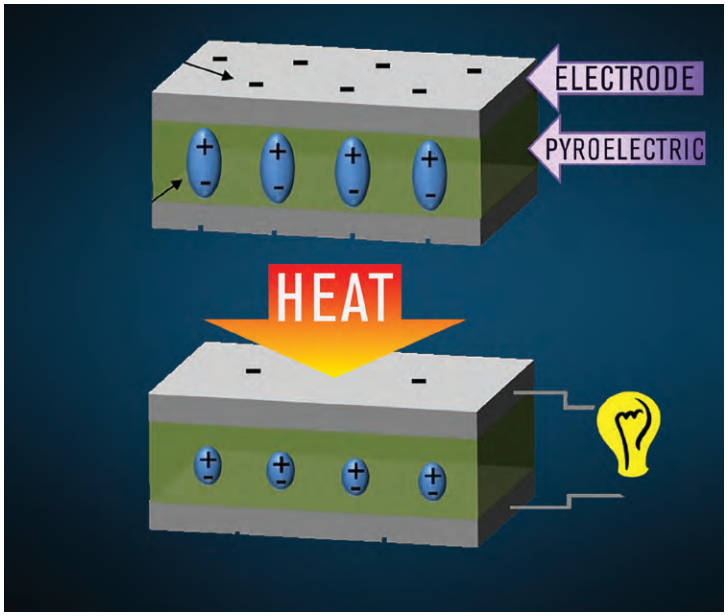
We explore the once mystic-crystals because we know that the material has

polarization, which can be altered by an electric field; and we see a potential pathway between thermal and electrical energy conversion, which is the ultimate goal.

Let's figure out how a pyroelectric engine would work. First, it would look a lot like a sandwich, with a pyroelectric material between metal electrodes. Let's go back to internal combustion, where the first process in energy conversion is compressing air and fuel. In the same way, the pyroelectric engine has an electric field with polarization that pushes a charge in one direction or the other until heat is applied.

The extremely thin pyroelectric engine heats up quickly, losing polarization, and electricity gets pushed evenly onto its surface. This is analogous to the power stroke of an internal combustion engine's piston, but you're pushing charge, not wheels. So, in the same way that the piston has to rise and compress fuel and air again and again to keep an engine going, we have to cool and remove the charge to keep the pyroelectric cycle going.

The voltage created through the electric field of atoms adds massive "pressures" with the ease of flipping a switch. Pyroelectric materials can also be made into sheets of thin film. Whether this material could ever replace a generator for modern uses, such as lighting a tent city will be determined as the science advances.



PYROELECTRIC HEAT ENGINE

Pyroelectric material can be made into a thin film so these "engines" can be extremely small, scalable and applied as a coating on uneven surfaces. (Illustration by Eric Proctor, ARL)

The temporary voltage that occurs when pyroelectric materials are heated and cooled is one of the least written-about in materials science literature. Historically there have been concerns, including the efficiency of the heat transfer. Recent advances in pyroelectric materials science have suggested that a pyroelectric engine eventually could reach the potential to make it a transformative technology.

CONCLUSION

Getting the pyro-material, the cycle and the measurement right requires a diverse team of scientists and engineers working together. ARL scientists are confident, though, that exploring this unique connection between the thermal and electrical realms will lead to new technologies that could leapfrog the ones we are looking at today, enabling new power sources for the future.

Electrical power will continue to be both a necessity and a challenge for our armed forces and the civilian world. Most of the power we use comes from some kind of heat source and goes through a similar energy conversion process in machines. As silicon did with vacuum tubes, a material that produces electricity that could replace machines could make processes vastly more efficient and potentially much less costly, adding yet another exciting technology that leads to innovations we can't even begin to imagine. The good news is that there are myriad new energy generation and storage technologies being researched inside and out of DOD.

For more information, contact the author at 301-394-1960 or at ***brendan.m.hanrahan.civ@mail.mil****.*

For information about ARL's collaboration opportunities in materials science, go to ***http://www.arl.army.mil/opencampus/****.*

DR. BRENDAN HANRAHAN works in the Energy and Power Division at the U.S. Army Research Laboratory in Adelphi, Maryland, and leads a pyroelectric energy conversion project. He is also co-founder of a race series originating in Washington that has raised $11 million for research into neurofibromatosis. He holds doctorate and master's degrees in materials science and engineering from the University of Maryland and a B.S. in ceramic and materials engineering from Clemson University.

MS. LESLEY A. SULLIVAN

COMMAND/ORGANIZATION:
Army Contracting Command – Orlando

TITLE:
Policy Branch chief

YEARS OF SERVICE IN WORKFORCE: 16

DAWIA CERTIFICATIONS:
Level III in contracting

EDUCATION:
MBA, Monmouth University; B.A. in psychology and business administration, Georgian Court University

AWARDS:
Achievement Medal for Civilian Service; Superior Medal for Civilian Service

Chart your own course

"My greatest satisfaction as part of the acquisition workforce is observing how the workforce experience level has broadened and customer support increased by developing standardized, accurate, up-to-date acquisition instruction and contract instruction material to ensure that our Soldiers are equipped with the best products and services."

When it comes to discussions of what's wrong with acquisition, many fingers point at regulation: There's too much of it and it slows everything down. Lesley Sullivan, Policy Branch chief for the U.S. Army Contracting Command's Orlando, Florida, contracting center (ACC-Orlando), agrees that there has been an increase in regulatory policy over the years. "But that's not necessarily a bad thing," she said. Consider, for example, DOD's mandate for peer review of solicitations and contracts.

Implemented in 2009, the goal of the peer reviews is to ensure consistent policy, improve the quality of contracting processes and facilitate sharing of best practices and lessons learned. The Office of the Director for Defense Procurement and Acquisition Policy facilitates peer reviews for all solicitations valued at $500 million or more and for all service contracts valued at $500 million or more.

"That mandate has been extremely beneficial," Sullivan said. "Having independent eyes review documentation before solicitation and award results in better documents, and I believe it has reduced the number of protests."

Sullivan has served as chief of the Policy Branch and special competition advocate at ACC-Orlando since 2010. She also serves as alternate principal assistant responsible for

contracting (PARC). She's responsible for the analysis and evaluation of contracting matters and the initiation, development and recommendation of contracting policies, procedures and controls on a variety of projects throughout the organization. She is also responsible for reviewing, interpreting and developing procurement policies, planning and program guidance, and management analysis on myriad programs and procurements. She participates on peer review boards, procurement management reviews and contract management reviews to assess and improve contract administration and to provide oversight of ACC-Orlando's contract execution.

She was designated as the ombudsman for ACC-Orlando in June 2015, and in that role she is responsible for reviewing complaints from the contractors under multiple-award task or delivery order contracts and ensuring that they receive fair opportunity for consideration, consistent with the procedures in the contract.

"The most important points in my career field are being designated the command advocate for competition, ombudsman and the alternate PARC," she said. "That displays the fortitude to face the toughest of leadership challenges in the execution of ACC-Orlando's portfolio."

Sullivan got her start in government work in 2000, through an intern program at the U.S. Army Communications-Electronics Command (CECOM), then at Fort Monmouth, New Jersey. "The great thing about the CECOM internship was that I had the chance to rotate through all three sectors: research and development, supply and services. I had the chance to work on some programs from cradle to grave, and to work on portfolios across the entire organization. It was a great experience."

Sullivan planned to transfer to Aberdeen Proving Ground, Maryland, when base realignment and closure forced CECOM to relocate there. "But my daughter wanted to go to college in Florida, so we decided to follow her." That move brought her to the Program Executive Office for Simulation, Training and Instrumentation (PEO STRI) in 2008, as it was just beginning to stand up its policy office following a transition from the Navy. PEO STRI's contracting center transitioned to ACC-Orlando in February 2015.

Sullivan's made some impressive contributions over the course of her career. Her efforts in promoting competition led to a competition rate of 88 percent at ACC-Orlando, and her work on policy and procedural guidance resulted in the organization receiving many commendations during its inaugural Headquarters, Army Contracting Command Procurement Management Review. She developed training for the ACC-Orlando workforce on critical acquisition processes that enhanced program execution, and developed instruction on communicating with industry that provides policy and guidance on methods to actively engage industry and benefit from its knowledge of available products and technologies. Her work on ACC-Orlando's procurement administrative lead time (PALT) industry day forum has reached nearly 2,900 industry partners, and it culminated in her selection to present the communication initiatives at the National Contract Management Association World Congress in July.

Held monthly, PALT industry day sessions provide interested industry partners with information regarding the status of ongoing ACC-Orlando procurements and the opportunity to request updates on specific procurements of interest in a question-and-answer forum. The PALT initiative has enabled the workforce to respond more quickly to critical, emerging requirements, and the sessions have evolved into market research opportunities for requiring activities as well as a venue in which to explore teaming.

"My greatest satisfaction as part of the acquisition workforce is observing how the workforce experience level has broadened and customer support increased by developing standardized, accurate, up-to-date acquisition instruction and contract instruction material to ensure that our Soldiers are equipped with the best products and services," said Sullivan.

Among those who've played a part in her success, Sullivan noted, is Wendy McCutcheon, a former division chief at CECOM. "She was willing to share her wisdom, knowledge, skills and expertise while maintaining a positive outlook on life," said Sullivan. "She gave me direct, constructive feedback while holding me to high standards, and she was genuinely concerned about me and my success."

She added that success is up to the individual: "The most important advice I would give would be that you are responsible for managing your own career and achieving your goals. Upon completing Level III in contracting, seek certifications in other career fields such as program management and logistics."

—MS. SUSAN L. FOLLETT

INTERSERVICE INTEGRATION

Construction contracting in Qatar provides a user-level view of acquisition reform, its possibilities and its challenges.

by Maj. Michael J. Carroll and Capt. Sarah Lark

Acquisition reform generally happens at echelons above reality for most of the Defense Acquisition Workforce. Successful reform is evident only when it begins to take root at levels below the contracting support brigade or below wing-level contracting. One of the most effective of these initiatives is the use of contracting vehicles to support multiple service component contracting offices. This integration can provide quick wins in terms of manpower and cost reduction.

However, the process is not as straightforward or as simple as it might seem. There are challenges to overcome and solutions to work out in implementing the necessary systems and processes, as the Army's Regional Contracting Command – Qatar (RCC-QA), a subordinate element of the 408th Contracting Support Brigade, and the Air Force's 379th Expeditionary Contracting Squadron (ECONS) experienced in working together to support construction efforts in Qatar.

COMPETING FOR VENDORS

Since the announcement that Qatar would host the 2022 FIFA World Cup soccer tournament, construction efforts across the country have exploded. High-dollar construction projects associated with the tournament have drawn the larger firms away from minor construction on Camp As Sayliyah and Al Udeid Air Base, the two installations in Qatar for U.S. military operations.

SHELTER FROM THE SUN

Contractors wire rebar together in January to support the poles for a new 379th Expeditionary Security Forces Squadron sunshade to protect military working dogs assigned to the 379th Expeditionary Security Forces at Al Udeid Air Base, Qatar. Joint Army-Air Force contracting efforts in Qatar have pointed up the need for permanent improvements in processes and systems to enable more interservice collaboration. (U.S. Air Force photo by Tech. Sgt. Terrica Y. Jones, 379th Air Expeditionary Wing Public Affairs)

Because the military-specific projects must be below the military construction threshold of $1 million, fewer vendors are interested in them than in the multimillion-dollar projects to support the World Cup.

With the smaller number of vendors to meet continued mission requirements, the Air Force and Army contracting activities were looking to streamline the award process by establishing a multiple-award construction contract or multiple-award task order contract. These contract vehicles would allow the contracting offices to lock in a vendor base and ensure that they would be able to satisfy the requirements of their customers. Both agencies released requests for proposals and quickly realized that if they did not work together, the Army and Air Force would be competing for a relatively small subset of vendors that would be interested in these lower-dollar projects.

PINPOINTING THE PROBLEM

During the first week of May 2016, while the Army and Air Force organizations were developing their independent contract vehicles, a joint contracting support board (JCSB) was being established in Qatar. Joint Publication 4-10, Operational Contract Support, identifies the JCSB as "the primary JFC [joint force commander] mechanism to coordinate and deconflict contracting actions within a designated operational area."

It was during the initial JCSB that the U.S. Central Command operational contract support integration cell (OCSIC) discovered the duplication of effort. The OCSIC is the lead agency within the combatant command that is responsible for integrating and synchronizing operational contract support. The contracting activities discussed the best resolution and decided that the 408th Contracting Support Brigade would continue with the award of a contract vehicle that could support both organizations.

Both commanders recognized that this was an opportunity to work together and gain efficiencies. Under the system that existed prior to this collaboration, each office was responsible for its own construction contract vehicle. By using a joint contract vehicle supporting both organizations, the commanders had the flexibility to prioritize other, non-construction requirements from their customers and focus on new strategic contracts to support the command.

ADDRESSING CONCERNS

Initial discussions between the two staffs raised several concerns:

- A lack of a common contract writing system between the services in Qatar. In theater, the Army used (and still uses) Procurement Defense Desktop (PD2) as the primary means of writing and awarding contracts. The Air Force, although trained on PD2 stateside, uses oContrax as its contract writing system in theater. Though the two systems have similar objectives, they lack a common system architecture that would allow them to communicate with each other.

- A major difference between the organizations in accepting and invoicing procedures. The Army relies on the Wide Area Workflow (WAWF) suite of applications, while the Air Force uses a manual invoice process through Shaw Air Force Base, South Carolina.

GETTING THE JOB DONE

Staff Sgt. Charles Wilson, 379th ECONS construction contracting officer, talks with a supervisor at a construction site in January at Al Udeid Air Base, Qatar. When military construction projects took a back seat to much more lucrative construction projects in preparation for the 2022 FIFA World Cup soccer tournament, Army and Air Force contracting offices took a unified approach to create larger, more appealing contract opportunities. (U.S. Air Force photo by Tech. Sgt. Terrica Y. Jones, 379th Air Expeditionary Wing Public Affairs)

OPPORTUNITY KNOCKS

Shimeka Goston, center, a contract specialist with RCC-QA, delivers a presentation on registration in the System for Award Management (SAM) to vendors at a March industry day at the Alfardan Gardens Housing Area in Ar-Rayyan, Qatar. Supporting Goston were other members of the pre-award team: from left, Fakera Nazneen, Michael Kraft, Maj. Trevor Chambers and Shonna Tyson. The event was a chance for vendors to get more information about the benefits of doing business with the U.S. government; SAM is a central registry of companies authorized to do business with the government. (Photo by Redjie Del Rosario, Vectrus)

Because invoicing instructions are included in the contract clauses, identifying the procedures that vendors will use is vital to ensure timely processing of payments.

- The need for a method whereby each organization can track the actions it has awarded. The contracting activities base their manning decisions in part on the number and complexity of actions that a contracting office has awarded. Thus, each organization must be able to account for the workload involved in awarding and administering contracts.

NOT-SO-SIMPLE SOLUTIONS

The seemingly simple solution—to grant the 379th ECONS access to the existing RCC-QA structures within Procurement Defense Desktop—proved to be more challenging than expected. Although they were already trained in the use of PD2, granting the Air Force personnel access to Army systems required sponsoring them in Army Knowledge Online and filling out multiple system access requests. The processing times for these requests varied, but the distances between system administrators in the continental U.S. and the end users in theater only made the waits longer. The significant time differences often meant lost days between submission of requests and actions taken.

The next hurdle was a longer-than-expected wait for the network communications team to verify the acceptability of the Citrix software used by the Army and install it on the Air Force users' computers. Because of the obvious need for information security, this process took approximately six weeks longer than expected.

Similarly, the two services lack a common procedure for acceptance and invoicing. The immediate solution was to include a local clause that Air Force-awarded task orders required submission of invoices manually through established Air Force procedures and that Army-awarded task orders would use WAWF. Issuing multiple sets of instructions for the same payment process, however, runs counter to the very efficiencies that the services have been trying to create.

CONCLUSION

The collaboration between an Army regional contracting command and an Air Force contracting squadron is a small step in realizing the goal of operational contract support: that different agencies work together to enable the combatant commander to fulfill the mission. While great strides can be made at the tactical level to increase communication and cooperation, the larger acquisition community must take concrete steps at the joint level to advance this goal.

The adoption of a common contract writing system and vendor payment method would allow for a single pool of system administrators and provide more effective theaterwide support.

For more information, contact the authors at ***Michael.j.carroll50.mil@mail.mil*** *or* ***sarah.lark@auab.afcent.af.mil****.*

MAJ. MICHAEL J. CARROLL is a contract management officer at RCC-QA, Camp As Sayliyah. He has an MBA in contract management from the Naval Postgraduate School and a B.S. in business management from Empire State College. He is Level II certified in contracting and has been a member of the acquisition workforce for nearly four years.

CAPT. SARAH LARK (USAF) is the commander of the 379th ECONS at Al Udeid Air Base. She has an M.A. in procurement and acquisition management from Webster University and a B.S. in business administration from The Citadel. She is Level III certified in contracting and has been a member of the acquisition workforce for 10 years.

ARC OF CHANGE
An unarmed Minuteman III ICBM launches during an operational test in February at Vandenberg Air Force Base, California. The William J. Perry Project aims to educate Americans about the dangers of nuclear war, offering easy ways to improve nuclear safety as well as more controversial ones, such as getting rid of ICBMs. (U.S. Air Force photo by Senior Airman Kyla Gifford, 30th Space Wing)

'AT THE NUCLEAR BRINK'

Dr. William J. Perry
Professor (emeritus) at Stanford University, senior fellow at the Freeman Spogli Institute for International Studies and the Hoover Institution; director of the Preventive Defense Project at Stanford's Center for International Security and Cooperation.

William J. Perry, secretary of defense during the Clinton administration, discusses acquisition reform, program managers and his worries about a nuclear catastrophe.

When President Bill Clinton asked William J. Perry to be his secretary of defense, Perry, then deputy secretary of defense, initially turned him down. Clinton's first pick to succeed Les Aspin, Adm. Bobby Inman, had suddenly taken himself out of consideration.

Perry decided to decline the job after "anguished discussion" with his wife, Lee. Together, they thought that the bright public spotlight would be too much for them, Perry writes in his memoir-cum-call to action, "My Journey at the Nuclear Brink." At the time, Perry, who turns 89 in October, was deputy secretary and had served as undersecretary of defense for research and engineering from 1977 to 1981. (On July 1, 1986, that title was changed to undersecretary of defense for acquisition. Later the title was expanded to add technology and logistics.) Perry's concern wasn't just about the media glare, however. He was also concerned that, while he had been able to serve as deputy under Clinton and undersecretary under President Jimmy Carter in an essentially "apolitical" fashion even though "I was (and am) a Democrat," it would be difficult to be a nonpartisan secretary of defense.

Clinton had called on a Friday to offer him the job. On Saturday, Perry declined. But later that same day, Vice President Al Gore, who was "aghast" at Perry's decision, invited him to his residence to discuss it. Gore convinced him that he should take the job, Perry wrote, and both the president and the vice president assured him of their support. After another consultation with Lee, Perry accepted, but told the president that he would serve only through Clinton's first term. Perry became secretary of defense in February 1994 and held the job until January 1997.

Perry was exceptionally, even unusually, qualified to be secretary of defense, and not just because of his previous service in the Carter and Clinton administrations or his service on the Packard Commission and other high-level government panels. Perry had served as an enlisted man in the Army, beginning at 18, and then as a reserve officer. He'd worked in the defense industry as a top scientist and as an entrepreneur.

During the Cuban missile crisis, he was director of Sylvania's Defense Electronic Systems, which he said was a "pioneer in sophisticated electronic surveillance systems." Perry was called to Washington by the head of the CIA's Office of Scientific Intelligence, where he spent eight days with a team analyzing images of nuclear-capable Soviet missiles in Cuba.

After former Secretary of Defense Harold Brown, his boss in the Carter administration, Perry was only the second scientist in the post. "Most of the secretaries of defense had backgrounds in law or politics," Perry said. "Of the scientists, there were, besides me, Harold Brown and [now] Ash Carter, of course. It's an unusual background for secretary of defense."

Service would seem to be a part of Perry's DNA. When, as a 14-year-old in 1941, he got the news from a friend that the Japanese had bombed Pearl Harbor, his biggest concern, he said, was that the war would be over before he got the chance to serve. In 1944, at age 17, the Pennsylvania native passed the tests and enlisted in the Army's Air Cadet program, then went home to wait for an opening. In anticipation, Perry left high school early to get a head start on college at what is now Carnegie Mellon University. In May 1945, just as he was finishing up his first semester, the Army disbanded the program and gave him an honorable discharge. He finished two more semesters and, at 18, enlisted in the Army engineers, he wrote, although the war was over. It would prove to be a life-changing experience. He was assigned to the Army of Occupation of Japan, and he went to Tokyo.

In a telephone interview with Army AL&T Senior Editor Steve Stark on July 28, Perry said that his experience in Tokyo, and then in Okinawa, forever shaped his worldview.

"The first month I was over there I was in Tokyo, and I witnessed the complete devastation of that city, which was—if you hadn't seen it, you'd hardly believe it," he said. Okinawa, he said, was far worse. "I don't know whether you remember your history of World War II, but Okinawa was the last great battle of World War II, and we absolutely devastated the island. There was hardly a building left standing. I saw firsthand at age 18 the devastation that could be done by conventional bombs, and then I recognized [in light of] the history of Hiroshima and Nagasaki ... [that] what had taken a thousand raids and tens of thousands of bombs in World War II now could be done by a single bomb in an instant."

Perry completed his service in the Army in 1947 and returned home to marry Lee, his high school sweetheart, and finish school, transferring to Stanford University, where he would earn both his bachelor's and master's degrees in mathematics on the GI Bill—unwittingly transplanting himself into the heart of Silicon Valley before it was Silicon Valley.

But a couple of years later, he returned to his native Pennsylvania to pursue teaching and a doctorate at Penn State. It was there that he got his first taste of applying his knowledge of math to defense problems, working for a local defense company called Haller, Raymond & Brown Inc. The company, later known as HRB Systems Inc., was acquired by E-Systems Inc., which is now part of Raytheon Intelligence and Information Systems.

According to Perry, it was just after completing his master's that North Korea invaded South Korea, and, having joined the Reserve Officers' Training Corps while at Stanford, he fully expected to be called upon to serve. He was not, but he continued to grow increasingly concerned about the threat of the "belligerent and aggressive Soviet Union," which supported North Korea and, in 1953, had detonated its first hydrogen bomb. That same year, Perry applied to finish his Ph.D. in absentia and applied for a job

One way, obviously, of improving the acquisition system is to make that job more profitable so that the program manager will want to stay in it and that the services will be motivated to keep the program managers in it for longer periods of time.

STEPPING UP
Perry, then deputy secretary of defense, attends the NATO Defense Ministers meeting at NATO Headquarters in Brussels, Belgium, in March 1993. Perry, who served as deputy secretary in 1993 and 1994, initially turned down President Clinton's request to serve as secretary over concerns that it would be difficult to be nonpartisan in that role. (DOD photo by Robert D. Ward)

at Sylvania's Electronic Defense Laboratories in Mountain View, California, not far from Stanford.

If not as wildly successful as some Silicon Valley entrepreneurs, Perry founded two tech companies, Electromagnetic Systems Laboratory Inc. and Technology Strategies Alliances, and worked at the cutting edge of defense capabilities.

Despite his reluctance to enter the harsh glare of the public spotlight when first offered the job of secretary of defense, Perry now attempts to use whatever glow that remains to educate the public, especially young people, about the dangers of nuclear weapons. In 2007, along with former Secretaries of State George P. Shultz and Henry A. Kissinger and former Sen. Sam Nunn of Georgia, Perry co-authored an op-ed piece in The Wall Street Journal, "A World Free of Nuclear Weapons," in which the four urged the U.S. to lead the world in reducing and eliminating nuclear weapons. Perry continues to work for education and understanding of the dangers of nuclear weapons, especially in the hands of terrorists, through his organization, the William J. Perry Project.

As a scientist, and a man who was at the heart of significant acquisition reforms as secretary of defense and as a member of the Packard Commission in 1985-86, Perry led DOD during the 1990s, giving him an unusual and distinct perspective on acquisition reform then and now. He is an extraordinarily accomplished man who could be resting on his many laurels, but, as his advocacy on behalf of his project shows, Perry has no intention of putting his feet up any time soon.

Army AL&T: When you look at the oversight that Congress has and you look at the many layers and stakeholders with oversight responsibility throughout the acquisition system, do you have any idea what percentage of the defense budget goes to compliance with regulation and oversight?

Perry: Well, I've never seen a reliable percentage figure for that, but I have to believe it's a pretty big figure because of all the people involved in it and the way it slows down the whole process. There's no doubt that it's an important part of the overall cost of our defense. Some of that, I have to believe, is necessary. I mean, we're spending the public's money. It's a lot of money,

GOING COMMERCIAL
The Army's Common Hardware Systems program office was designated last year as the primary organization to oversee procurement of tactical commercial off-the-shelf information technology. One of the acquisition reform initiatives rolled out under Perry's term as secretary of defense was to give program managers more authority to bypass military spec when off-the-shelf equipment would work just as well. (U.S. Army photo)

STEALTH DEFENSE
The Ohio-class ballistic-missile submarine USS Maryland prepares to get underway in March for routine operations from Naval Submarine Base Kings Bay, Georgia. Ohio-class submarines carry Trident ballistic missiles, a weapon that Perry supports modernizing as part of a larger strategy to deter Russian aggression. (U.S. Navy photo by Mark Turney)

and there's always a possibility of fraud, and we don't have to speculate about that because we see that happening in many other countries.

Army AL&T: And we've seen it happen in our own.

Perry: Well, yes, but I will say that there's a relatively small percentage of corruption and dishonesty in defense. Of course it happens, but it's a relatively small percentage compared to what we see in some other countries that are just riddled with corruption.

So I think because of the potential [for] corruption and the evidence of it in other countries, one could make a pretty good argument that the necessity for some sort of oversight minimized that possibility ... I would not make the argument that oversight is not necessary. Perhaps we've overdone it, perhaps we don't do it as efficiently as we should, but certainly to some extent this oversight is necessary.

Army AL&T: How much of the defense budget—this is asking you to speculate—is for Congress to make sure that there are jobs in their districts?

Perry: There's some of that, but I have to say that it's easy in the Pentagon to blame our problems on the Congress, that they're buying things that we don't need and that there are unnecessary restrictions on us. I think that's a relatively small percentage of the problem. A good bit of the problems we have in the Pentagon, however, are problems of our own making, and it's probably because it's just very difficult ... we can undertake very difficult tasks, and it takes a long number of years to accomplish them, and lots of things can go wrong.

DIFFICULT CHOICES
Perry, seated to President Clinton's left, and other members of the Clinton cabinet—including, clockwise from left, U.N. Ambassador Madeleine Albright, National Security Adviser Anthony Lake, Secretary of State Warren Christopher and Joint Chiefs of Staff Chairman Gen. John M. Shalikashvili—meet in the White House Situation Room in March 1994 to discuss issues related to the conflict in Bosnia. The U.S. sent roughly 25,000 troops to Bosnia, and the decision to deploy them weighed heavily on Perry. (Image courtesy of the William J. Clinton Presidential Library)

So, I'm not one who would tend to blame the Congress as the primary problem. I think they contribute, but they're not the largest part of the problems.

Army AL&T: In your view, what is the biggest problem?

Perry: The biggest problem is we're undertaking very big, complex and expensive systems over many, many years, and we have a changing cast of characters as we go through that process, so it's not a formula for efficiency and we don't really get much efficiency. I think, in general, our system is not corrupt, which is good, but it's inefficient, which is not good.

Army AL&T: About that inefficiency, we've heard again and again about the government program management capacity and the structure of the military and the inadequacy of training. Dr. J. Ronald Fox, in our interview with him, told us that one of the problems is the failure of most program managers (PMs) to have a competency in quantitative analysis, and that the lack of appropriate training makes PMs woefully outgunned. (See related story, " 'Groundhog Day' All Over Again," Page 14.) Is that part of what you're talking about with the inefficiencies?

Perry: Yes, it is. These are long-term programs. People rotate in and out of them. It has to do with the fact that we're looking at eight-, nine- and 10-year programs. So, as people rotate in and out, you obviously have an inefficiency because of that. That doesn't happen in industry, but it does happen in the government. We had looked a few times at fixing that problem. Years ago when I was the acquisition director, we had a program manager for the joint cruise missile program, for example, Rear Adm. Walter Locke, who was a longtime professional in program management. And he did a superb job, I think, of managing that program.

So there's nothing fundamentally wrong with the quality of the people we get for this. It's just that we do rotate them in and out of the jobs much too often. When we have not done that, as in the case of Admiral Locke and Rear Adm. Wayne Meyer, we got a superlative job of program management—equal to, if not better than, their counterparts in industry.

So I think we have demonstrated we can do it on occasion, but that ... does take people professionally dedicated to program management, not the people rotating in and out of it.

Army AL&T: In your view, what is driving acquisition reform today? Do you see parallels between what you were attempting in your reform efforts and what Secretary Ash Carter is attempting now?

Perry: I don't think I'm enough of an authority on what's [going on now] to comment in an informed way about it, but [from] what I know about it, I would say it's being driven by the same concerns and being driven by the same ideas for reform. In fact, Dr. Carter and I have worked together in this field on acquisition reform, both back when I was the [secretary]. Even though he was not the acquisition director, he and I had worked together before we both went into government on an acquisition reform study. I would not be surprised to see him pursuing some of the same ideas I was trying to pursue as the secretary.

Army AL&T: Is it fair to say you wanted to get rid of military spec?

Perry: I didn't want to get rid of it. I just wanted to make sure that it wasn't used in cases where it wasn't necessary. We know that whenever we can buy over the counter equipment, we can get a better deal on it. Therefore, the important thing was not to demand the military spec

when the over the counter stuff will do the job. That's the point.

So the issue simply is, can we give program managers the authority to go ahead and buy over the counter when they think it makes more sense, rather than restricting them by demanding [the] military to follow military specs? And one of the things that I tried to do when I was the secretary was give more of the authority to the program managers to make that decision. They probably were in the best position to decide whether they can get by with over the counter, so we should set it up so it's not too difficult for them to make that decision.

Army AL&T: Is that training? Is that how you set them up better?

Perry: Well, at the time, program managers were able to use over the counter equipment by applying for a waiver to do so. I observed that they weren't following up on that option because it was too cumbersome and involved too much time and red tape. So I wrote a one-page directive that authorized them to buy over the counter without seeking a waiver on their own judgment. It was a simple administrative change, but it's assumed that the program managers wanted to do the best thing and were knowledgeable enough that they would know the use of over the counter equipment was appropriate.

I have to say that it's easy in the Pentagon to blame our problems on the Congress, that they're buying things that we don't need and that there are unnecessary restrictions on us. I think that's a relatively small percentage of the problem.

Army AL&T: One of the things that [Undersecretary of Defense for Acquisition, Technology and Logistics Frank] Kendall says is that we've really got all the tools we need. One way you can read the Better Buying Power initiatives is that they try to point people in the direction of the tools we need. Are the tools there?

Perry: Then and now, I think we had pretty competent people as program managers, and the idea was to not only give them the authority to act but also lead them to understand [that] they would not be penalized for acting in an efficient manner. There are two different issues with the program managers; first of all, the point that you've made, that a lot of them are rotated in and out of the jobs and therefore never do develop any experience and competence; none has sufficient competence.

One way, obviously, of improving the acquisition system is to make that job more profitable so that the program manager will want to stay in it and that the services will be motivated to keep the program managers in it for longer periods of time.

The other way is giving the program managers the authority to make sensible decisions that save money when they think it's the right thing to do, which is what this directive was supposed to do relative to over the counter equipment—and also the point that you're making now, that sometimes when they make that decision they'll be wrong, so you don't want systems to come down on them like a ton of bricks if they exercise that authority and then something didn't go quite the way it was supposed to.

So all of this means having a program manager on the job longer to gain more competence and giving them more authority, and not jumping on them every time something goes wrong.

Army AL&T: Today, we read that the impetus for acquisition reform is that the United States faces a much wider variety of threats than it did in the past and that we really need to speed up acquisition. Do you agree with those propositions?

Perry: I think we've always needed to speed up acquisition. One of the reasons you want to speed it up is because time is money. If you look at programs that are overrunning in schedule, invariably they're overrunning in cost, too, and, in fact, overrunning the schedule is the primary reason for the overrunning cost. So you always want to be able to do things more quickly. But that's not any more necessary today than five, 10 years ago. I am absolutely convinced that doing programs faster is a cost savings as well as time savings.

Army AL&T: If people were going to take a more commercial approach in procurement programs, how would that work?

Perry: I'm not really advocating a commercial approach. I'm advocating longer tenure for program managers, No. 1, and No. 2, giving them the authority to buy commercial equipment whenever that makes good sense, which is very often the case. So that doesn't necessarily mean they're using commercial acquisition techniques; it just means they're buying commercial equipment off the shelf.

A LEGION OF SERVICE
President Barack Obama meets with, from left, Perry, former Sen. Sam Nunn, former Secretary of State George P. Shultz and former Secretary of State Henry A. Kissinger in the Oval Office in May 2009, to discuss the U.S. nuclear nonproliferation policy. Since leaving their official roles, Shultz, Perry, Kissinger and Nunn have urged the U.S. to take the lead in reducing and eliminating nuclear weapons worldwide. (Official White House photo by Pete Souza)

Army AL&T: How does the program manager make that call: military spec, bespoke system or off-the-shelf commercial?

Perry: Well, certainly we end up doing that for computer systems. The Defense Department generally doesn't go out and design their own laptops. They end up adopting laptops that were designed for commercial purposes. I think that's a good principle to follow. You see something that has been designed [and] is doing a good job in industry and you have a need for something comparable to that in the military. I would think you would start off by saying, can we adapt that system that's already been built rather than starting off with a new one? It may need some modifications to meet special military needs.

In general, I think you'd be better off starting off with an existing system and adapting it rather than starting with a clean sheet of paper. Now in the case of fighter airplanes, there is no comparable industrial model, so that doesn't apply. In a lot of other things, it does. In aircraft carriers it doesn't apply. I mean there are lots of cases where it just doesn't apply. So you need to look at places where it does apply, and there are lots of those, probably more than we actually have taken advantage of.

Army AL&T: I have an 18-year-old son who tells me that the world is by far a safer place than it has been at any time in history, although the headlines certainly don't make it seem so. Is it your view that the United States today faces more threats, or a wider variety of threats, than it did back in the 1990s?

Perry: No, I don't think so. I think your son has a lot of data on his side to support his view. I think there's an important exception to that rule, and it's a very important exception—and that's in the case of dangers of the nuclear catastrophe, which, in my opinion, are greater now than they were even during the Cold War.

Just looking at the time since the development of nuclear weapons, I'd say that the possibility that they might be used in a catastrophic way is higher today than it has been at any time since they've been developed. And that's something I don't think we generally appreciate. That's a fundamental point in the book that I've written.

Army AL&T: Let's get to the book. In terms of the way that DOD is going and the way that Congress is going and the way

TIGHTENING THE CIRCLE
President Barack Obama leads a moment of silence April 13, 2010, at the Nuclear Security Summit in Washington, D.C., in memory of the lives lost when the plane carrying Polish President Lech Kaczynski crashed in Russia three days earlier. The moment of silence preceded the first plenary session of the summit. Obama has held four such summits, which aim to bring together dozens of countries and international organizations to maintain better controls over fissile material and keep it from terrorist groups. (Official White House photo by Chuck Kennedy)

that the administration is going, you don't believe that they're taking the nuclear threat seriously enough, is that right?

Perry: I'll give you a qualified answer to that. I do not have a yes-no answer. Of the catastrophes that I worry about, probably No. 1 on the list is nuclear terrorism. That is going to happen if a terror group is able to get hold of a nuclear bomb. But they can't make one on their own unless they get hold of the fissile material. If they get hold of that, then they can make the bomb.

But what the [Obama] administration is doing in that regard is they have held what they call nuclear security summits, of which there have been four. The whole purpose of the summits is to get to the 50 or so nations that have nuclear fissile material either for weapons programs or for commercial programs to maintain better controls over that material.

For some years, some research reactors have used highly enriched uranium. The same research could be done without using highly enriched uranium, so a move is afoot now—and what the Nuclear Security Summit has been promoting—to get those research reactors that use highly enriched uranium shut down. There are a lot of things that can be done. Each one of them is small in and of itself, but in the aggregate they become important [and] make it much more difficult for a terror group to get hold of highly enriched uranium.

And that is a real worry. I would say that is the No. 1 worry right now, of a nuclear catastrophe, and in that area I think the administration has done very commendable work that has lowered the danger.

Another field is that we could have a regional nuclear war, and I'm thinking that the poster child for that would be Pakistan and India. And beyond the tens of millions of deaths that it might cause India and Pakistan, if they have as many as 100 or so nuclear bombs detonated in cities in those countries, it would cause atmospheric pollution that could very likely lead to something like a nuclear winter for perhaps 10 years.

And that would be another kind of catastrophe—not the kind you would ordinarily think of, but it would cause widespread crop failure and widespread starvation in the world. That's another kind of catastrophe, and that one, in my opinion, is not a remote catastrophe. Beyond that …

Army AL&T: That's not a remote catastrophe?

Perry: No, it's not remote. The dangers we had through the Cold War, I don't believe now that the United States and Soviet Union were ever ready to deliberately initiate a nuclear war against the other side, the so-called surprise attack or bolt out of the blue. We prepared for that, we worried about it and, in retrospect, I don't think it was a serious concern. What was a serious concern in the Cold War was that we were susceptible to an accidental nuclear war or a war by miscalculation.

And the poster child for war by miscalculation was the Cuban missile crisis, where we damn near blundered into a major nuclear holocaust. As far as an accidental nuclear war is concerned, I am aware of three false alarms that could very well have caused us to mistakenly launch our ICBMs [intercontinental ballistic missiles] during the Cold War, one of which [false alarms] occurred when I was undersecretary of defense.

I was actually woken in the middle of the night to help figure out what was going wrong.

So those dangers of a nuclear war, not just a catastrophe but a real nuclear war erupting during the Cold War, I think were only likely through an accident or miscalculation.

When the Cold War ended, those dangers went away, but now that we have a more and more aggressive posture between the United States and Russia, those dangers, I think, are coming back. So those are four different ways we could have some kind of a nuclear catastrophe: terrorism; a regional nuclear war; an accidental nuclear war, say by a false alarm; or a war by miscalculation. And those last two have only become issues since the U.S. and Russia in the last decade developed more and more aggressive attitudes toward each other. Those two are not as dangerous as I think they were during the Cold War, but they are unnecessarily dangerous. They add a risk we should not be taking.

Army AL&T: You seem accustomed to having a lot riding on your shoulders. What's it like to be secretary of defense? What kind of weight does the job bring?

Perry: It's challenging, exciting. I found it a very gratifying job. I felt I was doing something important. I felt I was doing it well, so it was very gratifying. But also the scary part of it, we were not looking at big nuclear issues in those days. That was one period of time in history when the danger of nuclear catastrophe was minimal, but we were conducting a peace-enforcement operation in Bosnia and we had 25,000 troops over there, not an insignificant number.

Before we sent them over there—and I testified to Congress about the proposed operation—a lot of congressmen did not want to send troops over there. Several of them were telling me, "You're going to be having a hundred body bags a month coming back from there," and if they wanted to say something that got my attention, that was it. Because I was the one to sign the deployment orders to send the Soldiers on a mission in which they could be killed, and I was the one who went out to Andrews Air Force Base and met the plane that brought back the remains and talked with the families, explained to them why it was we sent their husband or father or wife or son on this dangerous mission.

So, more than anything else, the personal aspect of the job—sending people on missions in which they could get killed—made a deep impression on me. And I always thought about that every time I signed those deployment orders. The reason I went to Andrews Air Force Base to meet the families was that they kept the human element of that alive, and when I signed the orders, I had to think about the objective element of it: "We're doing this for the following security reason." I had to satisfy that test.

Then I went out to Andrews Air Force Base to remind myself that I was also a human element to it. I didn't want to get detached from that human element. So that's a long-winded answer, but that was the thing which I think probably was unique about that job and which made a very strong impression on me.

Army AL&T: When you left office, was it because you were tired and wanted to get on to something else? What were your feelings?

Perry: Well, first of all, when President Clinton offered me the job, I first turned it down. I wasn't seeking the job and was persuaded that I should take it, and I think that was the right decision to take it. I wanted to make the point that I really wasn't seeking the job in the first place, but I told him at the time I was only going to serve one term. And when the end of

UNDER THE RADAR
The F-117A Nighthawk is the first operational aircraft designed to exploit low-observable stealth technology. As undersecretary of defense for research and engineering, Perry spearheaded the development of stealth, funding a DARPA project that ultimately produced the F-117. (U.S. Air Force photo by Master Sgt. Lance Cheung)

that term came up in 1997, I was totally ready to leave, not because I was unhappy with the job. I felt good about the job, felt good about what I was doing, but I was also just turning 70.

I thought, "Do I want to sign up for four more years? I'll be taking it up to 74. Will I still have the energy at 74 to do the job? Will I have some kind of illness between now and then?" I mean, the statistical element of things that could happen to you after you pass 70 starts to get higher. It turned out that I got to the end of that next term all right, but that was one of the concerns in my mind.

I guess there was one other thing, a subjective factor. I observed that no secretary of defense had ever successfully served two terms. Three of them tried. There was [Robert S.] McNamara and [Caspar W.] Weinberger and, [after me, in his second time as secretary,] [Donald H.] Rumsfeld, and all three of them were fired about the third year of their second term. Now, it wasn't that I was worried about being fired; it was that I thought there's something about this job that gets to you, so I was worried about whatever it was that had gotten to those men, all of whom were quite capable.

I didn't want it to happen to me. So that was my subjective thinking, and I cannot say which of these weighed most heavily on my thinking.

Army AL&T: Your title, "My Journey at the Nuclear Brink," suggests you're still there.

Perry: Oh, yes. As I said, I think today, the danger of nuclear catastrophe is, if anything, a little greater than it was in the Cold War. It's changed in nature, but the overall danger of a real catastrophe with a nuclear weapon is greater than it

was during the Cold War because now we have the danger of nuclear terrorism, the danger of regional war that didn't even exist during the Cold War.

I invite you, by the way, to go to my website and there will be a link to the video, [a] six-minute video. Spend six minutes watching it. It tells what happens if a terrorists' bomb goes off in Washington, D.C., so it'll make you feel right at home.

Army AL&T: Tell us about the William J. Perry Project.

Perry: Well, the project is an educational project. It's set up to educate on a large scale, with a special emphasis on young people, about the dangers of nuclear weapons, about things that can be done to reduce those dangers. The first step is get people to understand there is a danger today that is in fact a greater danger than during the Cold War. I think hardly anybody understands that. If you read even the first couple chapters of the book, I think you'll become convinced I'm probably right about that conclusion.

There are lots of things we can do to reduce those dangers. I'm not trying to scare people. I'm trying to focus them on: Here are the things we can do to make ourselves safer. Some of them are pretty simple. Others, like giving up our ICBMs, are hugely controversial.

Army AL&T: What are the stakes there? Is it one of those typical things where somebody says, "That's my rice bowl, don't kick it over?"

Perry: There is some of that, but I don't think that's a big issue. The big issue is that we have confused notions about deterrence. We deter the Russians. And I sign up for that. That's why I'm willing to support a modernization of our Trident force, but we think we have to deter them weapon for weapon. In other words, doing the same thing they're doing. We can achieve deterrence, in my judgment, with a strong Trident force backed up by a strategic bomber force.

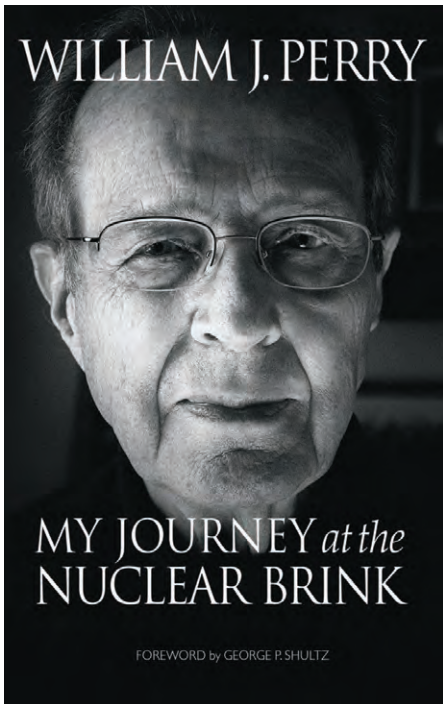
We don't have to have the same kind of deterrent weapons that they have, but because the Russians have ICBMs, we're not likely to give them up even though we have more than enough Tridents to do the job, and even though our Trident submarine forces are probably better than their submarine forces. We just seem to have to do the same thing they're doing. It's a psychological factor, I think, rather than a military factor.

All during the Cold War—probably the time when I had a responsibility for maintaining that deterrence as the undersecretary of defense for acquisition—we were fielding 12,000 nuclear weapons. Nobody could make an argument that we needed 12,000 weapons for deterrence. We did it because the Russians had that many. We had to keep up with them. We had to maintain parity, not just in total numbers but in kinds of weapons.

And, of course, they had the same reaction and so that's what led to this arms race, which eventually led to more than 70,000 weapons. It was a crazy thing, but it was driven by the psychology that we had to do what they were doing and they had to do what we were doing, better.

Army AL&T: You were instrumental in the development of stealth technology. How did that come about?

Perry: One of the first things I did [as undersecretary of defense for research and engineering in 1977] was review what was going on. I came across this program called stealth, which was in DARPA [the Defense Advanced Research Projects Agency], a small research and development program. They were probably, I don't know, eight or nine months into it. As far as I knew, that was the first anybody had done anything on [stealth]. I looked at it and I said, "This is revolutionary. I'll give you six months to prove you can do this and all the money you need, and if you do prove it, we're going to pull out the stops and go full-bore forward on it." And then in six months, they built an experimental airplane to work over the radar ranges, which couldn't detect it, and then we put the program in stealthy mode and poured the money into building the F-117. Talk about acquisition reform: We built the F-117 in four years.



THE LATEST CHAPTER
Published in 2015, Perry's book about his lengthy federal career issues several strong warnings about the growing nuclear threat and steps that must be taken to keep it in check.

MS. ALADRIAN WETZEL

COMMAND/ORGANIZATION:
Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology

TITLE:
Department of the Army systems coordinator

YEARS OF SERVICE IN WORKFORCE: 12

DAWIA CERTIFICATIONS:
Level III in program management; Level III in test and evaluation; Level I in science and technology management

EDUCATION:
M.S. in management, University of Maryland University College; B.S. in mechanical engineering, University of Delaware

AWARDS:
U.S. Army Acquisition Corps Certificate in Recognition of Achievement; Commander's Award for Civilian Service; Army Achievement Medal for Civilian Service; DA Commendation for Exemplary Performance and Outstanding Achievement

A front-row participant in the acquisition process

Looking for a little motivation? Consider Aladrian Wetzel's perspective on the importance of what she does. "I am not a Soldier. I don't wear a uniform or shoot a rifle or drive a truck in theater. I sit at a desk, write information papers and attend meetings. However, I am still a member of the Army. The decisions I help to influence, the documents I write and review, the emails I send and the meetings I attend impact the type of equipment Soldiers receive to fight their mission."

Part of the Army Acquisition Workforce (AAW) since 2004, Wetzel is a DA systems coordinator (DASC) in the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology (OASA(ALT)). "As a DASC, I'm able to shape all aspects of planning, budgeting and execution, financial management, logistics, procurement, technical requirements and program management issues for several programs of record. I have a direct link to HQDA staff and key decision-makers," she said. "The coordination work I do directly impacts the programs of record's ability to secure funding, validate requirements, develop equipment and field to Soldiers."

As a DASC, Wetzel serves as the subject matter expert (SME) and program executive office (PEO) representative on system acquisition and program management. She's responsible for coordinating program actions among the project manager, the PEO, the Army acquisition executive, the White House Office of Management and Budget, HQDA, the Office of the Secretary of Defense and congressional stakeholders. Additionally, she analyzes and reviews program requirements, funding data, statutory documentation and program

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BBP 3.0

> *"As a DASC, I'm able to shape all aspects of planning, budgeting and execution, financial management, logistics, procurement, technical requirements and program management issues for several programs of record."*

execution for a multibillion-dollar portfolio. She leverages a range of skills in her work, using her engineering and technical expertise as an SME, oral and written communication skills to deliver information, and collaboration skills when working with stakeholders.

"Being a DASC has been one of the highlights of my career thus far," Wetzel said. "I have the opportunity to influence Army decisions, and I have a front-row seat for seeing the acquisition process in action. This position has given me an appreciation for how things work, from budgeting to requirements to fielding equipment, and I've had the good fortune to interact with congressional members. That has given me a unique perspective on the relationship Congress has with the Army and DOD."

Wetzel was recruited out of college in 2004 by the U.S. Army Evaluation Center (AEC), a subordinate organization of the U.S. Army Test and Evaluation Command (ATEC). She accepted the position for two reasons: She needed a job, and she saw the value in civil service. "The need to provide Soldiers with well-engineered, -tested, -evaluated and -managed equipment is what has kept me here," she added.

Wetzel worked within the ATEC family of subordinate commands through 2012, holding posts with AEC's Survivability Evaluation Directorate, the Developmental Test Command's Aviation, Missiles and Unmanned Systems Division, and AEC's Aviation and Fires Evaluation Directorate. Over the course of her career, she noted, "I have had an excellent network of first-line supervisors and senior leaders who believed in my potential, recognized my skill set, gave me career advice, encouraged me to apply to leadership training and developmental assignments and supported my career decisions."

From 2012 through 2015, Wetzel took part in the Competitive Development Group/Army Acquisition Fellowship (CDG/AAF) program sponsored by the U.S. Army Acquisition Support Center. CDG/AAF provided her the opportunity, as someone who had worked in test and evaluation, "to gain experience in program management, work in different positions, participate in unique leadership training opportunities and network with others within the Army acquisition community," she said.

CDG/AAF participants are responsible for determining the types of developmental assignments they're interested in pursuing, and network with program management personnel to pursue those opportunities. As such, said Wetzel, CDG/AAF "was the first time I took control of my career and planned three years in advance the types of training and broadening assignments I wanted to become a more knowledgeable Acquisition Corps member and future senior leader in the Army Acquisition Workforce."

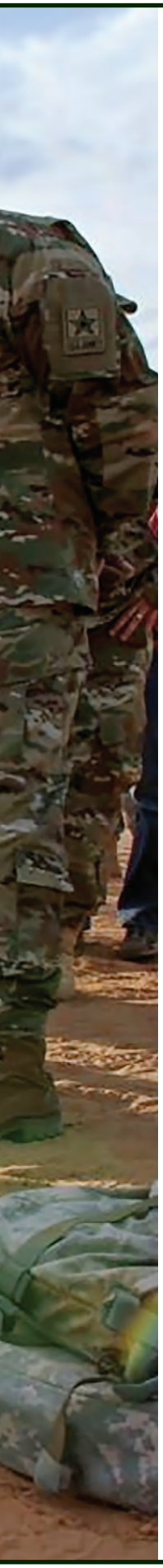
Her developmental assignments included rotations as a test and evaluation lead for the project manager (PM) for the Distributed Common Ground System – Army (DCGS-A) within the PEO for Intelligence, Electronic Warfare and Sensors, and a project lead supporting the PM for the Warfighter Information Network – Tactical in the PEO for Command, Control and Communications – Tactical. She served as a DASC in the OASA(ALT) Intelligence Directorate while in the CDG/AAF, and, when the fellowship was complete, accepted a full-time position within OASA(ALT) as the DASC for DCGS-A.

Interested in a similar career path? Wetzel has three pieces of advice. "Learn through classes, certifications and those around you: My career has benefited from taking leadership classes, earning advanced degrees and taking courses to earn certifications. I constantly learn from my co-workers and always ask questions in all forums," she said. Second, focus on networking and collaboration skills. Increasing technical skills and becoming an SME are equally as important as the ability to work with others.

"Throughout my career thus far, I have received insight into acquisition-related topics and career opportunities through networking and collaboration. Understanding how to cooperate and network with others are both necessary to succeed in the small community of Army acquisition," she said. Finally, Wetzel recommends developmental assignments and career-broadening experiences. "Having an understanding of other jobs and learning new skills makes for a well-rounded AAW employee and makes you competitive for future opportunities."

—MS. SUSAN L. FOLLETT

IMPROVEMENT FROM THE GROUND UP
A Soldier from the 17th Infantry Regiment briefs Kendall, center; Gary Martin, center right, program executive officer for command, control and communications – tactical; and Lt. Gen. Michael E. Williamson, principal military deputy to the assistant secretary of the Amy for acquisition, logistics and technology, during Network Integration Evaluation 16.1 in October 2015 at Fort Bliss, Texas. Kendall predicts that acquisition improvement will happen best at the operator level—project and product managers, contracting officers and engineers—because they are most familiar with what needs fixing and know best how to fix it. (Photo by Spc. Lauren K. Harrah, 24th Press Camp Headquarters)



THINK, EXECUTE, IMPROVE

For the Hon. Frank Kendall, there is no magic called 'acquisition reform.' His objective is 'acquisition improvement,' and it starts with hard work and critical thinking about Better Buying Power.

by Mr. Steve Stark

The Hon. Frank Kendall isn't especially fond of the term "acquisition reform." He thinks it "conveys the impression there's some dramatic shift that's going to make things fundamentally different. I don't think there's any such thing."

Kendall, undersecretary of defense for acquisition, technology and logistics (USD(AT&L)), vastly prefers "acquisition improvement," he said during an Aug. 16 interview with Army AL&T following his keynote address at the third U.S. Army Innovation Summit, at the College of William & Mary in Williamsburg, Virginia. The series of summits is hosted by the U.S. Army Materiel Command.

Kendall's wide-ranging and occasionally funny keynote centered on the successes of Better Buying Power (BBP), launched in 2010, and where its initiatives still need to go. For Kendall, BBP is acquisition improvement, and it's having a real impact. DOD is enjoying a 35-year low in cost growth for major contracts, Kendall said in his presentation. Part of that is a result of the should-cost initiative, which he said is playing a big role in controlling costs. "Things have been getting better" since the rollout of BBP, "and in a rather significant way," he said. Not only that, "We've done all this without affecting the profit of industry."

Still, "acquisition reform" is in the air, with the passage of bills by the U.S. House of Representatives and the Senate as part of their respective versions of the National Defense Authorization Act (NDAA) for Fiscal Year 2017. But the kind of reform that Congress is proposing isn't what Kendall is after.

"There are a great many things wrong with the Senate bill," he said. "There's the *one* thing that's very wrong with the House bill," which is that it shifts $18 billion out of overseas contingency operations and into the base budget for DOD. That proposed action has prompted a veto threat from President Obama.

The next step is for House and Senate conferees to reconcile differences between the two bills, then for Congress to pass the compromise version. "Then we'll see if there's a veto or not," Kendall said. Given that the presidential election complicates the politics in a big way, it is anyone's guess when the FY17 NDAA might land on the president's desk in any case, he acknowledged.

DOING BETTER, INCREMENTALLY

Kendall addresses award winners and audience members at the December 2015 Defense Acquisition Workforce Awards ceremony at the Pentagon. One of the principles underpinning Kendall's BBP approach is the use of incentives and awards to improve both the professionalism of the workforce and the performance of industry. "We get what we reward," he noted. (U.S. Army photo by Leroy Council)

"[Acquisition professionals] work in a very difficult environment. They're constantly criticized by a lot of outside stakeholders who don't understand what they do at all."

"We'll see what happens in the election, because I don't know that we'll get a bill even until after the election," which could change the prospects for acquisition reform fundamentally, Kendall said. "We've always had an NDAA, but if there were ever a year when not having an NDAA looked like a realistic prospect … this is probably that year."

AN ENGINEERING SOLUTION

Kendall has served in both Democratic and Republican administrations. He is an engineer, a teacher, a lawyer and a manager, and he knows a thing or two about the military, acquisition, program management, government and statute. He graduated from the United States Military Academy at West Point, where he has also taught, and spent 10 years on active duty, ultimately retiring as a lieutenant colonel after a stint in the Army Reserve. In all, he has more than 40 years of experience in engineering, management, defense acquisition and national security affairs in private industry, government and the military, according to his official biography.

In addition to a bachelor of science degree from West Point and a master's in aerospace engineering from the California Institute of Technology, Kendall has an MBA from the C.W. Post Center of Long Island University and a juris doctor degree from Georgetown University Law Center.

It's clear that he approaches acquisition improvement from the methodical, problem-solving perspective of an engineer, but also from the thoughtfully considered perspective of a professor urging his students to think outside the box. He understands that acquisition is "full of complexity, it's full of difficult and tough problems to solve," as he said in his keynote. That's largely because, in his view, DOD does so many different things with so many different variables that there is no single right answer, no textbook formula. Acquisition programs have to be tailored to the product being acquired, and the managers of those programs have to think along those lines.

Although Kendall is far too much the lawyer and diplomat to say so, he can leave a listener with the distinct impression that he thinks that "our board of directors, the Congress," is to some degree wasting its time with acquisition reform, if not just plain getting in the way.

During his keynote, he said that Sen. John McCain, R–Ariz., and former Sen. Carl Levin, D–Mich., before he retired from the Senate in 2015, "asked for inputs from a lot of people on the acquisition system and how to make it better. One of the things I said was, 'Stop writing rules.' " The system, and the systems it procures, are just too complex for Congress to try to micromanage them, Kendall said. "We do a huge variety of different things. Sometimes we are going to take a lot of risk because the urgency is high and we really want to go fast and we don't mind wasting money along the way. Other times, we want to take a more deliberate process because you want to get a better product and be sure of that."

The BBP initiatives are the means to that end. For Kendall, improving acquisition is akin to continuous quality improvement in manufacturing. "You attack the most common, important defects first, and you solve those first," he said. "Then you … move on to the next round of things." Do that enough, and processes get streamlined and become more efficient.

Kendall said he'd been asked more than once "whether I was more of a revolutionary or evolutionary leader, and I thought about that—and the answer was, 'I'm more evolutionary, but I'm going to stick around until I'm revolutionary by the time I'm done.' That's what I've tried to do." Taken as a whole, he said, "in a way, that's reform, but it's the accumulation of a lot of little things by an awful lot of people that lead to large-scale improvement by the time you're done."

A GUIDE TO HELP YOU THINK

The April 24, 2013, implementation directive accompanying BBP 2.0 is tagged, "A Guide to Help You Think," which is a theme Kendall comes back to again and again: Think.

LATEST AND GREATEST — BUT IS IT ENOUGH?

Kendall tours the U.S. Naval Research Laboratory (NRL) in Washington, D.C., in February, reviewing the Navy's latest research in new weapon technologies with Dr. Thomas A. Mehlhorn, center, superintendent of the Plasma Physics Division, and Dr. John Montgomery, director of research. The United States no longer enjoys the technological superiority that it had in the 1950s, '70s and '90s, and Kendall puts a high priority on the third offset as a way to restore that superiority. (Photo by James Marshall, NRL)

BETTER BUYING POWER PRINCIPLES

Kendall began his keynote at the third U.S. Army Innovation Summit with a list of better buying power principles. "I kept getting briefings from people who would tell me, 'Sir, I'm doing better buying power here. I'm following Better Buying Power principles,' " he said. "And because I'd never put out any better buying power principles, I thought that was interesting, and I'd ask them what they were.

"Most of the time, people didn't know. But they were following them. They were sure they were following them. And most of the time they probably were. But I thought it might be useful to actually write some down."

At the very top of the list, he said, is the importance of people. Although that's not at the top of the list of Better Buying Power initiatives "for a variety of historical reasons," it tops of the list of principles, because that's where people belong.

Principle 1: People matter most; we can never be too professional or too competent.

Principle 2: Data should drive policy.

Principle 3: Critical thinking is necessary for success; fixed rules are too constraining.

Principle 4: Controlling life cycle cost is one of our jobs; staying on budget isn't enough.

Principle 5: Continuous improvement will be more effective than radical change.

Principle 6: Incentives work—we get what we reward.

Principle 7: Competition, and the threat of competition, is the most effective incentive.

Principle 8: Defense acquisition is a team sport.

Principle 9: Our technological superiority is at risk, and we must respond.

Principle 10: We should have the courage to challenge bad policy.

In his keynote at the summit, he said, "In my 45-odd years in the military and defense acquisition, I have lived through a lot of cycles of what's called, usually, acquisition reform." While it has taken on different flavors over the years, he said, "generally speaking, fads have not worked."

"I will tell this community and any other community that there is no magic that's going to remarkably transform acquisition. What it takes to make things better is professional people, hard work and a willingness to challenge assumptions and a willingness to go back and look at the data and understand what's really happening. It's a very difficult, incremental process."

BBP is acquisition reform at the operational level, and the kind of improvement that Kendall and Secretary of Defense Ash Carter, his boss and predecessor as USD(AT&L), most want to see in order to meet the challenges that DOD faces. Congress, he said, keeps wanting "to replay the same experiments."

But that misses the point. "I think the basics about how to do a program are understood," he said. "What we need to do is just hone our craft and become better at it. So, what we've been doing for the past several years, in the Better Buying Power initiatives in particular, is to address a number of areas that we thought we could improve, learn from that experience and then kind of move on to the next round of things." Improvement has emerged from that work and from other experiences, Kendall said.

TAILOR AND CHALLENGE

Like the engineer he is, rather than going for magic solutions, Kendall looks at the massive layers of rules that make up the Defense Federal Acquisition Regulation as obstacles for which it is possible to engineer solutions. In that context, fixed rules are too constraining, he believes.

One of the methods he wants "my acquisition people" to use in all programs is tailoring. What he means by that is simple. It comes back again to "think," he said in the interview. "I emphasized tailoring—I wrote it myself—in [DOD Instruction] 5000.02 [Operation of the Defense Acquisition System] extensively. I must have put the word in there 150 times." (A search of the document turned up slightly fewer than 50 appearances.) In reading about tailoring in 5000.02 and listening to Kendall, it seems clear that what he wants program managers to do is figure out how to make the rules work in their favor, not to follow them without thinking. For Kendall, the key is critical thinking.

FACING THE THREAT

An amphibious assault vehicle proceeds to assault the objective during Exercise Steel Knight at Marine Corps Base Camp Pendleton, California, in December 2015. Addressing threats currently facing U.S. forces will require innovation, and that innovation won't necessarily come cheap. For Kendall, it will also require re-examining how DOD does its job. (U.S. Marine Corps photo by Sgt. Justin Boling)

Tailoring is about "structuring a program in the best way to deliver that program. And if it's a service contract, it's structuring the business deal for the service contract and the best way to get whatever the government is trying to achieve."

As if addressing the risk-averse, Kendall said, "There is enormous encouragement at the top. We do do a conscious process of tailoring documentation requirements for people coming through for milestone decisions, but the tailoring I'm really most interested in is the program structure itself—what risk mitigation is needed, if any, and what decision points are needed, and how that's logically structured together. How things are set up with industry, so we don't have things that don't have value for us, for example."

So, the next generation of Meals, Ready to Eat doesn't need the same kind of structure, oversight, testing, evaluation and so forth as the next-generation fighter jet. The risks are entirely different. Engineers need to be supervising engineers, for example, because if a program manager doesn't fundamentally understand the stakes, risks or requirements of a program, the government can end up purchasing something that, even if it may be the latest and greatest tech whiz-bangery, does not fulfill the government's purpose.

Tailoring has to be within the rules but, Kendall emphasized, "a lot of things can be waived." He wants managers to decide if something should be waived—and then ask for the waiver.

Misunderstandings about tailoring, he said, "may have to do with some of the OSD [Office of the Secretary of Defense] staff, who kind of like to do things by the book, sometimes. What I've done there recently is put a requirement on them that, if they raise an issue with a service, they have to tell the service—and

THINKING IT THROUGH

Kendall learns about recent efforts in robotics by the U.S. Army Research Laboratory (ARL) from Dr. Brett Piekarski, right, manager of the Army's Micro Autonomous Systems and Technology Collaborative Technology Alliance, during an Aug. 8 visit to ARL's Adelphi, Maryland, facilities. For Kendall, there are no magic solutions for improving acquisition, just hard work and a willingness to challenge assumptions. (Photo by Jhi Scott, ARL Public Affairs)

me—whether they think [the issue is] something they consider to be essentially a DAB issue—a Defense Acquisition Board issue. If it's not, the service has the discretion to address it or not. If it is, then I have to agree that it is, and the service would have to address it by the time we make the decision."

This tendency of some acquisition professionals—both civilian and military—to maintain a knee-jerk adherence to the rules and rely too much on one-size-fits-all schoolbook solutions clearly rankles Kendall. He understands where it comes from, though, in what he described as a very difficult time for acquisition professionals. They "work in a very difficult environment," he said. "They're constantly criticized by a lot of outside stakeholders who don't understand what they do at all."

In presenting the last of his 10 BBP principles during his keynote (see sidebar, Page 116), he said, "How many times have you heard somebody say, 'That's really stupid, but that's what they say we have to do, so I'm going to do it?' … What I encourage people in the acquisition community to do is: Don't do that. If you see something that's stupid, it probably is stupid. … Raise the flag that there's something wrong."

OPERATOR AS REFORMER

For Kendall, much of the urgency of acquisition reform at the legislative level should be about money, and less about the operation of the defense acquisition system. Improvement in acquisition will happen best at the operator level—project and product managers, contracting officers and engineers—because those are the people who know what needs fixing, and in many cases are fixing it.

If there is something that really needs reforming other than DOD's lack of money, in Kendall's view, it is the country's

It's clear that he approaches acquisition improvement from the methodical, problem-solving perspective of an engineer, but also from the thoughtfully considered perspective of a professor urging his students to think outside the box.

seriously eroded technological advantage. In his keynote, he talked about the first and second offsets, and the unprecedented technological superiority of the U.S. in the 1950s, '70s and '90s. "We don't have that anymore," he said. "We're much more in an even game, if you will, with the globalization of technology."

He is not the only one who sees this as a big problem and to say, "We need a way to restore dominance." That would be the third offset, even if whatever that finally may be is still open to discussion. The armed forces face a wide range of challenges with a wide range of characteristics, and "we're asking our military to be able to do a lot of different things simultaneously—different theaters, different types of threats … counterterrorism campaigns up to major warfare against near-peer competitors in different types of domain-dominated theaters," Kendall noted.

Addressing those threats and getting the kind of innovation that the United States needs costs money. For Kendall, it also requires re-examining how DOD does its job. "Given what's happened in the world, we really do need to examine the way we do business and whether we've got it fundamentally right or not," he said, adding, "I think there are some indications … that we need to make some changes."

The technologies used in the first Gulf War and elsewhere at that time were developed in the 1970s. "Twenty-five years is a long time in terms of technology and the application of technology to operations," Kendall said. "Think about 25-year increments starting with about 1865 and how much warfare changed in each of those increments. It's pretty dramatic, and here we are, 25 years after the first Gulf War, with largely the same operational concepts, and we've modernized, we've improved to a certain degree, but we really haven't fundamentally changed. … Others have been working very hard to figure out how to defeat us since then."

It's much easier, Kendall said in his keynote, for countries that have lost to re-examine what they're doing and to change. "It's harder for countries who have been very successful," he said.

CONCLUSION

Getting back to the people at the top of his list of BBP principles, Kendall said in his presentation, "If you wanted to do something easy, you shouldn't have gone into defense acquisition. It's full of complexity, it's full of difficult and tough problems to solve."

Part of his concern for people—the professionals who keep Army acquisition going—has to do with the Army in particular. "I have some concerns, quite frankly, about the Army, about the sustainment of your workforce as you go through what for all of us is a very stressing time—keeping your engineering talent pool up, keeping your contracting talent pool up, keeping your program management talent pool up, the various professions that are critical to the success of bringing your programs in. … Those are the people that make all the difference in the world," he said.

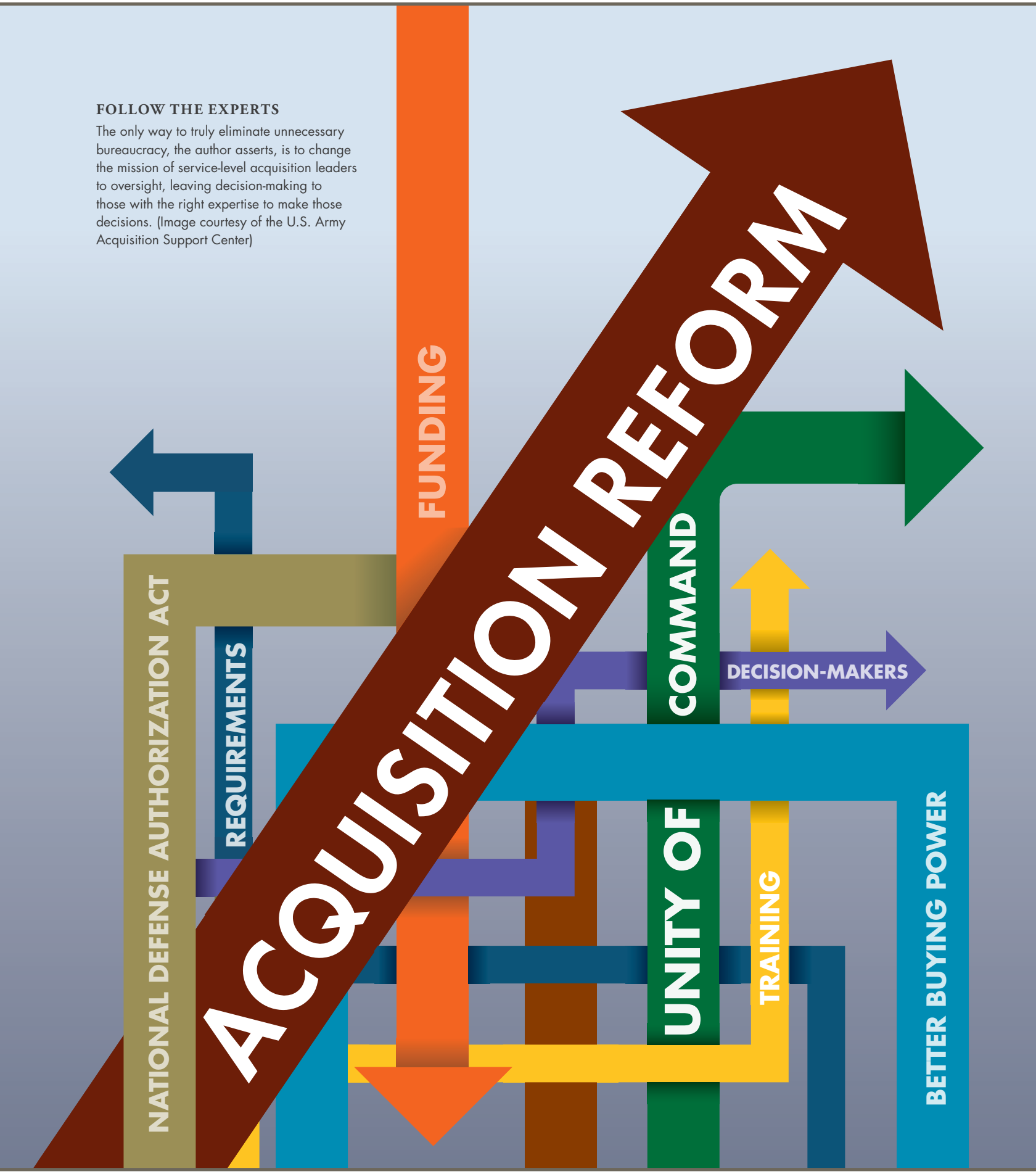
"My themes for 2016 are, first of all, sustain the momentum, and second of all, keep your sense of humor, because there are some things going on that require one—to either be very, very frustrated or keep your sense of humor."

Whatever Congress does, whatever the election brings, it's a sure bet that Kendall will keep motoring forward with his own version of acquisition improvement. Eventually, if he has his way, his evolution of the process will become a revolution—that's just what he said he will do.

MR. STEVE STARK is senior editor of Army AL&T magazine. He holds an M.A. in creative writing from Hollins University and a B.A. in English from George Mason University. In addition to more than two decades of editing and writing about the military, the Army, and science and technology, he is, as Stephen Stark, the best-selling ghostwriter of several consumer health-oriented books and an award-winning novelist.

FOLLOW THE EXPERTS

The only way to truly eliminate unnecessary bureaucracy, the author asserts, is to change the mission of service-level acquisition leaders to oversight, leaving decision-making to those with the right expertise to make those decisions. (Image courtesy of the U.S. Army Acquisition Support Center)



BEEN THERE, DONE THAT

With all due respect, defense leaders, you don't know jack: A former program manager offers his idea for effective acquisition reform—giving MDA to PEOs.

(The third in a quarterly series of commentaries by former program managers from the Naval Postgraduate School.)

by Dr. Robert F. Mortlock, Col., USA (Ret.)

Attention, senior defense officials, senior service officers and congressional leaders: With all due respect, in most cases you are not the most qualified to make defense acquisition decisions. There are simply too many competing priorities and, frankly, you probably don't know jack about most program specifics.

The root causes of the program failures within DOD are not hard to identify: changing requirements or "requirements creep"; military-unique, stringent ruggedization requirements; unstable budgets and limited resources; immature technology and integration challenges; the rapid pace of technology changes; deliberate decision support templates unsuitable for adapting to rapidly evolving threats; limited incentives and high barriers to entry for commercial innovation and competition because of a complex federal procurement system built on myriad laws and regulations; and political pressures along with legitimate needs for a healthy defense industrial base to advance national policy objectives. The complex interaction of all these factors renders sweeping defense acquisition reform initiatives ineffective.

The Office of the Secretary of Defense (OSD) and service leaders are the most capable leaders in the history of the profession of arms, as evidenced by the most respected, technologically advanced and most capable military force successfully executing missions around the world. OSD and service leaders are in many ways the equivalent of private-sector CEOs, overseeing programs in the billions of dollars. Like the rest of us, they have their capability gaps; the really successful CEOs recognize these limitations and surround themselves with teams that compensate for these gaps. For example, would the CEO of a $2 billion company make a large financial commitment without the expert advice of at least one business adviser or a team of MBAs, as well as the board of directors? Not likely. Service leaders? Somehow, their operational leadership excellence equates to business intellect. This way of thinking is a mistake.

ACQUISITION REFORM OFF TRACK

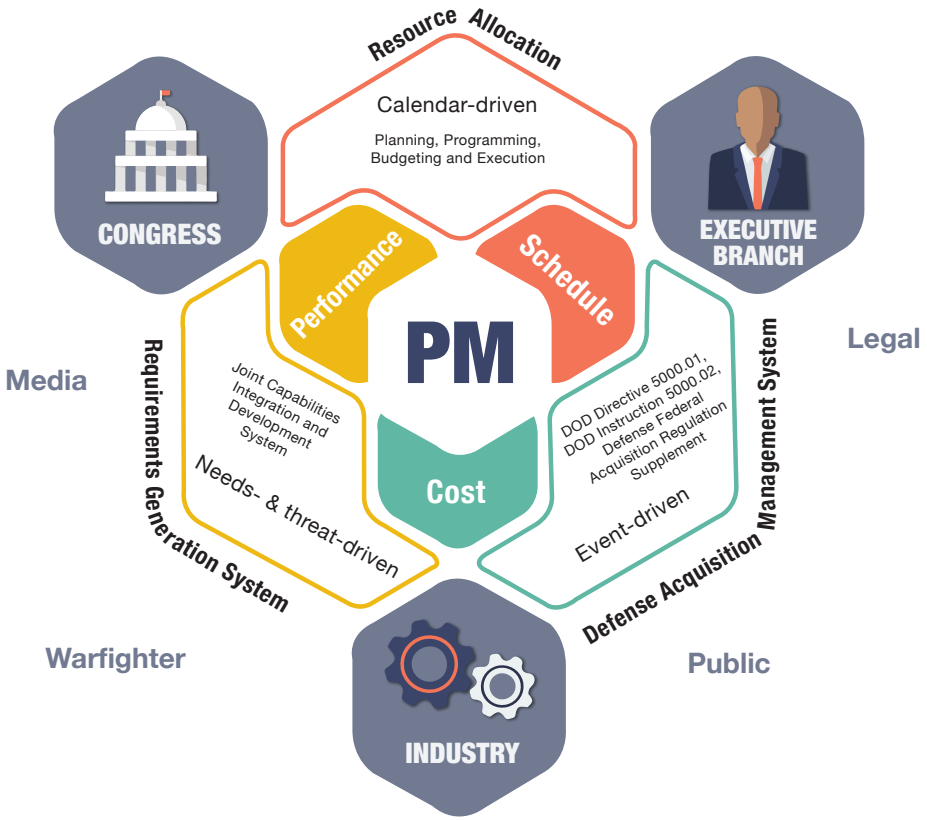
I don't believe that recent legislation in the National Defense Authorization Act (NDAA) for FY16 giving service chiefs more acquisition authority is a step in the right direction. The service chiefs will need to stand up acquisition cells to support these new responsibilities, adding more bureaucracy.

The defense acquisition institution can be thought of as a three-legged stool, or a triad, with three decision support templates to guide programs: one for the generation of requirements, known as the Joint Capabilities Integration and Development System (JCIDS); a second for the management of program milestones and knowledge points, known as the Defense Acquisition Management System and governed by the Defense Federal Acquisition Regulation Supplement (DFARS); and a third for the allocation of resources known as the Planning, Programming, Budgeting and Execution System (PPBES). (See Figure 1.)

The service chiefs already have oversight over two of the three legs: requirements (JCIDS) and funding (PPBES). Real reform will only come when the service chiefs exercise control and oversight of requirements and funding, and layers of bureaucracy and oversight are eliminated from the third leg, the Defense Acquisition Management System described in the DOD 5000-series regulations.

Decades of acquisition "reform" initiatives have failed to produce true innovation and change within defense acquisition because they have not addressed requirements (capability-based and threat-driven), funding

FIGURE 1



BUREAUCRATIC OVERKILL

The DOD 5000-series regulations spell out layers of bureaucracy and oversight for the Defense Acquisition Management System. (SOURCE: Dr. Robert F. Mortlock, Col., USA (Ret.))

(fiscal year- and calendar-driven) and acquisition (milestone- and event-driven) reform with equal vigor. Acquisition reform initiatives have tended to focus on the Defense Acquisition Management System—for example, annual NDAA acquisition reform initiatives from Congress and multiple Better Buying Power initiatives from DOD—and have not succeeded in integrating these mutually supporting decision support templates.

One defense acquisition reform initiative that continually appears over the years is the elimination of non-value-added oversight and bureaucracy. The FY16 NDAA targets the reduction of layers of acquisition bureaucracy. In terms of lean thinking (a well-documented, successful commercial industry best practice), non-value-added oversight and bureaucracy equate to waste. All three iterations of the Better Buying Power (BBP) initiatives outline goals to streamline management, eliminate unnecessary oversight, reduce documentation and empower program managers (PMs).

However, the success of specific actions taken to effectively change statute, policy or regulations and successfully implement these changes over time is debatable. Therefore, from a former PM's perspective, I'll make a specific recommendation that I believe would target the elimination of non-value-added oversight and bureaucracy.

DECISIONS, DECISIONS

DOD already has invested in the training, education and experience of PEOs. It could maximize this investment by empowering PEOs as the program milestone decision-makers. (SOURCE: U.S. Army Acquisition Support Center)

MY BIG IDEA

The only way we are ever going to truly eliminate unnecessary bureaucracy is to change the mission of OSD and service-level acquisition leaders to oversight, with decision-making being left to those with the expertise to make those decisions. Specifically, I believe that the milestone decision authority (MDA) for acquisition programs should be at the program executive officer (PEO) level. PEOs are trained, educated, certified members of the acquisition profession. They have decades of operational management experience and training in leading program offices, and they possess the necessary technical and business acumen, as well as the mandated acquisition certifications required of members of the acquisition profession.

Would the CEO of a $2 billion company make a large financial commitment without the expert advice of at least one business adviser or a team of MBAs, as well as the board of directors? Not likely.

By making PEOs the MDA of acquisition programs, OSD and service acquisition staffs can be optimized for oversight roles exclusively. Their advice to senior leaders would be oversight and not decision-making—a lower threshold. Currently, OSD and service acquisition staffs have grown because they support the defense acquisition executive (DAE) or service component

Decades of acquisition "reform" initiatives have failed to produce true innovation and change within defense acquisition because they have not addressed requirements (capability-based and threat-driven), funding (fiscal year- and calendar-driven) and acquisition (milestone- and event-driven) reform with equal vigor.

acquisition executives (CAEs) as decision-makers—considerably smaller staffs would be required to support the DAE or CAEs as oversight to PEO MDAs. Ultimately, MDA decisions are merely recommendations to service leadership, who control the overall service modernization strategy with requirements and resources.

CONCLUSION

So, Congress—specifically, the House and Senate armed services committees, responsible for the NDAA—I'm talking to you: You got it right to try to legislate defense acquisition reform, but you didn't target the root cause of the issue: non-value-added bureaucracy and oversight of programs. If you want to reduce service and OSD acquisition staffs and not simply transfer the bloat to another part of the service, strip the decision-making authority away from top-level OSD and service officials and give that authority to the folks who are truly and uniquely qualified: members of the acquisition profession who have the education, training, expertise and experience to make those decisions—PEOs. PEOs are demonstrated leaders, acquisition professionals, and an underutilized, invaluable national resource available for OSD and service leaders.

The DOD 5000 directive is based clearly and rightly on the policy objectives of flexibility, responsiveness, innovation, discipline and streamlined, effective management while emphasizing competition. More BBP initiatives that reiterate the same concepts in the DOD 5000 series are not needed. Enforce the principles and concepts already outlined therein. Keep acquisition reform simple and target the non-valued-added processes. Target bureaucracy, and the result will be the elimination of waste and the effective application of the commercial best practice of lean thinking.

DOD already has invested in the training, education and experience of PEOs. Now it can maximize this investment by empowering PEOs as the program milestone decision-makers. Make the PEOs the MDAs for their assigned programs by mandating it in new congressional NDAA legislation and by changing DOD acquisition policy and regulations.

Can I say for sure that PEOs as MDAs would eliminate all acquisition program cost and schedule overruns and performance shortfalls? Unfortunately, no. But it would empower the right folks and simplify the PM chain of command, applying a key principle of war—simplicity—to defense acquisition.

I acknowledge that this recommendation only addresses bureaucracy and oversight within the Defense Acquisition Management System—another incremental reform approach, you might say. However, if we first establish trust and confidence in PEOs as MDAs, over time maybe we can expand the conversation to consider giving PEOs not only MDA responsibilities but funding and requirement authorities as well, thus applying another key principle of war: unity of command.

DR. ROBERT F. MORTLOCK, COL., USA (Ret.), managed defense systems development and acquisition efforts for the last 15 of his 27 years in the Army, culminating in his assignment as the project manager for soldier protection and individual equipment in PEO Soldier. He retired in September 2015 and is now a lecturer for defense acquisition and program management in the Graduate School of Business and Public Policy at the Naval Postgraduate School in Monterey, California. He holds a doctorate in chemical engineering from the University of California, Berkeley, an MBA from Webster University, an M.S. in national resource strategy from the Industrial College of the Armed Forces and a B.S. in chemical engineering from Lehigh University.

Small Change, BIG DIFFERENCE

One-size-fits-all spending rules don't always serve the unpredictable needs of contingency contracting. Here's one simple fix.

by Lt. Col. William C. Latham Jr. (USA, Ret.)

READY TO RESPOND

Sgt. 1st Class David Grider and Air Force Maj. Katrina Curtis gather information for their response to a complex catastrophe during Operational Contract Support Joint Exercise 2014 at Fort Bliss, Texas. The annual U.S. Army Contracting Command exercise allows Soldiers, Sailors, Airmen, Marines and civilians from government and industry to work together in a contingency contracting environment, presenting them with complex challenges and the opportunity to develop and exchange solutions. (Photo by Staff Sgt. Sheila Holifield, Army Reserve Sustainment Command)

"You may ask me for anything you like except time." Napoleon Bonaparte

With more than half a trillion dollars in defense spending at stake each year within the U.S. government's budget, defense acquisition policy receives enormous attention in our nation's capital, from Capitol Hill to the Pentagon to the lobbyists, scholars, think tanks and publications (including this one) devoted to national security. This attention is well-deserved, given the stakes. Better equipment provides American military forces with a critical technological edge while giving pause to would-be adversaries.

The time-consuming process of developing, testing, producing and fielding advanced weapon systems focuses primarily on the needs of the future. The immediate impact of acquisition policies receives significantly less attention. These policies, however, can dramatically influence the outcome of current military operations and, in turn, the success or failure of our national security strategy.

Nowhere is this impact more visible than in the U.S. Central Command (CENTCOM) area of responsibility, where contractors outnumber American service members. A recent DOD report lists nearly 43,000

GOING WITH THE FLOW

Workers build a new aqueduct system in Afghanistan's Khost province during Operation Enduring Freedom using funds from the Commander's Emergency Response Program, which lets coalition leaders rapidly allocate resources to address local needs. The unpredictable nature of contingency contracting calls for greater funding flexibility to respond to emerging requirements, the author asserts. (Photo by Staff Sgt. Robert R. Ramon, 345th Mobile Public Affairs Detachment)

contractors supporting U.S. military operations in the region, including 26,435 in Afghanistan and 2,485 in Iraq. The result largely of changes in our strategic environment over the past 25 years, operational contract support has now become an important part of how the Army does its job.

Contingency operations are, by definition, unpredictable. To succeed, Army commanders must coordinate with and provide support to other U.S. military services, other U.S. governmental agencies and coalition partners, while complying with American and host-nation laws, policies and procedures. These myriad rules and regulations ensure fairness and prevent waste, fraud and abuse of the acquisition system. Unfortunately, these safeguards also limit our ability to procure the necessary support in a timely manner, and they occasionally push commanders to sacrifice best value—the optimal choice in terms of quality and past performance, not just cost—in the pursuit of mission accomplishment.

THE DEFICIENCY OF ANTIDEFICIENCY

The massive leasing of nontactical vehicles such as sedans and sport utility vehicles during Operation Iraqi Freedom illustrates the unintended consequences of these fiscal restrictions. At the beginning of the American military surge in 2007, Multi-National Forces Iraq was spending more than $2 million a month on this requirement. Commanders would have saved millions had they simply purchased the nontactical vehicles necessary to support the mission, but equipment purchases above a certain threshold require "other procurement, Army" (OPA) funds. Because OPA funding was severely limited, commanders spent "operation and

The time-consuming process of developing, testing, producing and fielding advanced weapon systems focuses primarily on the needs of the future. The immediate impact of acquisition policies receives significantly less attention.

maintenance, Army" (OMA) funds to lease the same vehicles multiple times. "We probably wound up paying for those vehicles three times over," observed one senior contracting officer familiar with the problem.

To avoid this problem, appropriations laws should change to provide senior commanders with latitude in reprogramming (transferring) operational funds. Current federal appropriations law, most notably the Antideficiency Act, "prohibits federal employees from making or authorizing an expenditure from, or creating or authorizing an obligation under, any appropriation or fund in excess of the amount available in the appropriation or fund unless authorized by law." This restriction, which dates to the original Antideficiency Act passed in 1884, restricts government officials from spending funds they don't have and further prohibits spending funds appropriated by Congress for purposes not intended by Congress.

These prohibitions make perfect sense within the routine, fairly predictable budget cycle in which most federal agencies operate. During contingency operations, however, military commanders must cope with mission requirements that change on a daily, if not hourly, basis. Because lives are at stake, these operations demand more speed and flexibility, not only from the American military forces performing these missions, but also from the organizations and resources provided to support them.

A WELL-PLACED EXCEPTION

Unfortunately, current fiscal laws are ill-equipped to respond to these emerging requirements. The laws themselves provide limited flexibility for responding to unforecast requirements, and the legislative process is generally slow to

TRANSFER OF RESPONSIBILITY

Sgt. Peter Streb of the 3rd Advise and Assist Brigade (AAB), 1st Cavalry Division (1st CAV) briefs local Iraqi workers at the start of a June 2011 day on Contingency Operating Station (COS) Garry Owen. The COS transferred to the control of the Iraqi Army later that year when the U.S. military prepared to end its mission in Iraq. Approximately 2,500 contractors continue to support U.S. military operations in Iraq, and about 26,500 in Afghanistan. (U.S. Army photo by Staff Sgt. Victor Rios, 3rd AAB, 1st CAV)

A BETTER MOUSETRAP

Master Sgt. Joe Mancias, 36th Infantry Division Garrison Command noncommissioned officer in charge, directs local Iraqi contractors at Contingency Operating Base Basra, Iraq, in June 2011. The contractors, referred to as "the Blue Man Crew," loaded up debris left from the move of Army and Air Force Exchange Service facilities. The author recommends a better balance of timeliness, regulation and best value for optimal results in contingency contracting missions. (Photo by Pvt. Andrew Slovensky, 362nd Mobile Public Affairs Detachment)

MANY DETAILS TO CONSIDER

Local nationals contracted to assist with retrograde operations in Afghanistan remove wood at a site coordinated by the 4th Resolute Support Sustainment Brigade (RSSB) at Bagram Airfield, Afghanistan, in December 2014. The objective was to prevent financial and material waste and remove structures that did not meet safety standards. A plethora of laws, policies and procedures—from both the U.S. and the host nation—govern the U.S. military's provision of support to its forces, other U.S. governmental agencies and coalition partners. (Photo by Sgt. Adam A. Erlewein, 4th RSSB Public Affairs)

appropriate additional funds, and legislators are reluctant to permit federal agencies to reprogram existing funds from one appropriation to another.

An amendment allowing geographic combatant commanders to reprogram funds between different appropriations under exceptional situations, especially during the initial stages of a contingency operation, would immediately improve military responsiveness while allowing deployed contracting officers to buy smarter and faster. This limited authority would provide deploying forces with greater access to commercial support in theater, while enabling contracting officers to acquire the best support at the best value.

Just as importantly, it would remove a significant stumbling block from the timeline for opening a theater and rapidly building combat power. The senior commander would become accountable for any reprogramming decisions, and the legislative branch could retain control and fulfill its fiscal responsibility by establishing dollar thresholds on this reprogramming authority, auditing subsequent expenditures and investigating dubious command decisions.

CONCLUSION

Current acquisition laws have created a deliberative review process designed to ensure that government officials in every federal agency, and especially within DOD, exercise an appropriate level of stewardship in spending taxpayer dollars.

This formal and time-consuming process does not always meet the needs of Soldiers deployed in harm's way, however. Granting senior commanders the authority to transfer money between different defense appropriations during a crisis would demonstrate a sincere commitment to the success of our military operations and the welfare of our troops.

(This article contains the author's own opinions and does not reflect the official policy of the Army or DOD.)

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CATCH 5000.02

All programs are ACAT I, with all the bureaucracy and paperwork that implies, even when they're ACAT II or III—except when they're 'tailored to the characteristics of the product being acquired.' But the grounds and means for tailoring are less than obvious, so even the simplest acquisition gets treated like the next-generation fighter jet. It's time to 'reform' the instructions by refining the way the Army thinks about smaller acquisition programs. Here's how JPEO-CBD is doing it.

by Mr. Douglas W. Bryce

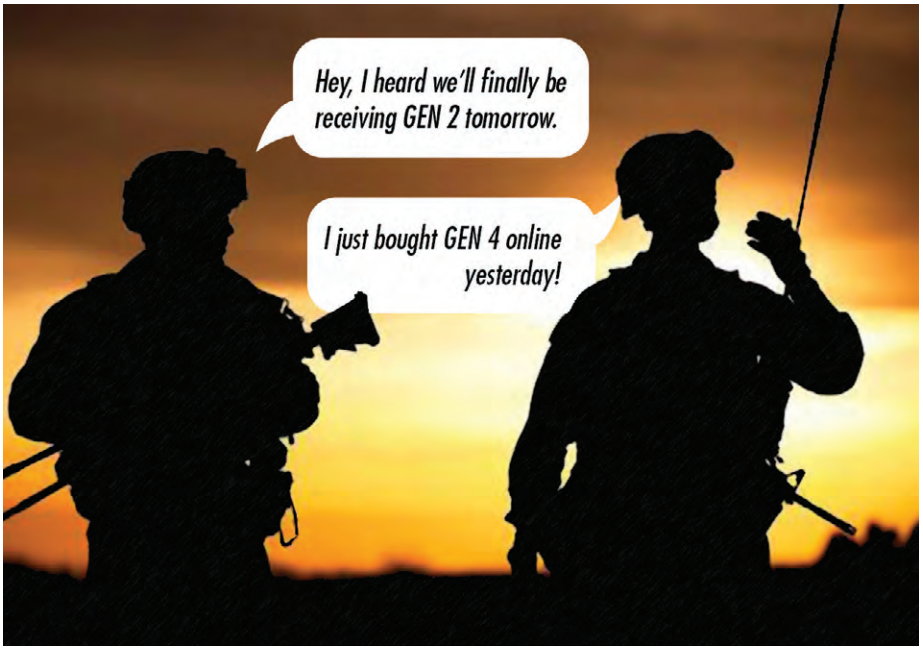
The entire acquisition process is a team sport.

The Army and the wider DOD are coming to grips with the fact that the global security and operating environment, combined with technology upgrades, is changing so rapidly that certain materiel development processes and procedures that we have relied on for decades are becoming obsolete. This is true with elements of the Defense Acquisition System, where systems sometimes take so long to develop that they are no longer cutting-edge by the time they are fielded. If the acquisition system does not catch up with the rapidly changing operating environment, we run the risk of letting our warfighters down.

The Defense Acquisition System has been under scrutiny at the highest levels of government, resulting in initiatives such as Better Buying Power (BBP). DOD implemented initiatives like BBP to strengthen defense acquisition by streamlining processes, improving productivity and controlling cost, resulting in more affordable capability for warfighters. While BBP has resulted in significant progress, much remains to be done—specifically, streamlining acquisition at all levels in the "Big A" and "little a" processes, particularly tailoring acquisition to more rapidly advance individual programs. To that end, we need to focus on training for all acquisition practitioners (in

requirements, testing, logistics, program management, contracting, etc.). We also need to focus on the "team sport" aspects, with all stakeholders in the acquisition process coming together for a common purpose: getting our warfighters what they need in a more streamlined fashion.

Our primary basis of training for the acquisition community is the Acquisition Category (ACAT) I program—those totaling $480 million or more in research, development and test funding or $2.78 billion in procurement funding—which have enormous reporting and oversight requirements. But the reality is that most programs are ACAT II or III and do not require the same level of oversight and bureaucracy. These programs are great candidates for targeted streamlining, which would accelerate schedules and reduce costs while maintaining high standards for capability delivery. This, too, should be taught as a skill set.



IS IT HERE YET?
Many of the materiel systems developed through the Defense Acquisition System take so long to field that they are obsolete by the time they get to the Soldiers who need them. JPEO-CBD recommendations would streamline acquisition by making changes to policy, training and culture. (Image courtesy of the U.S. Army Acquisition Support Center (USAASC))

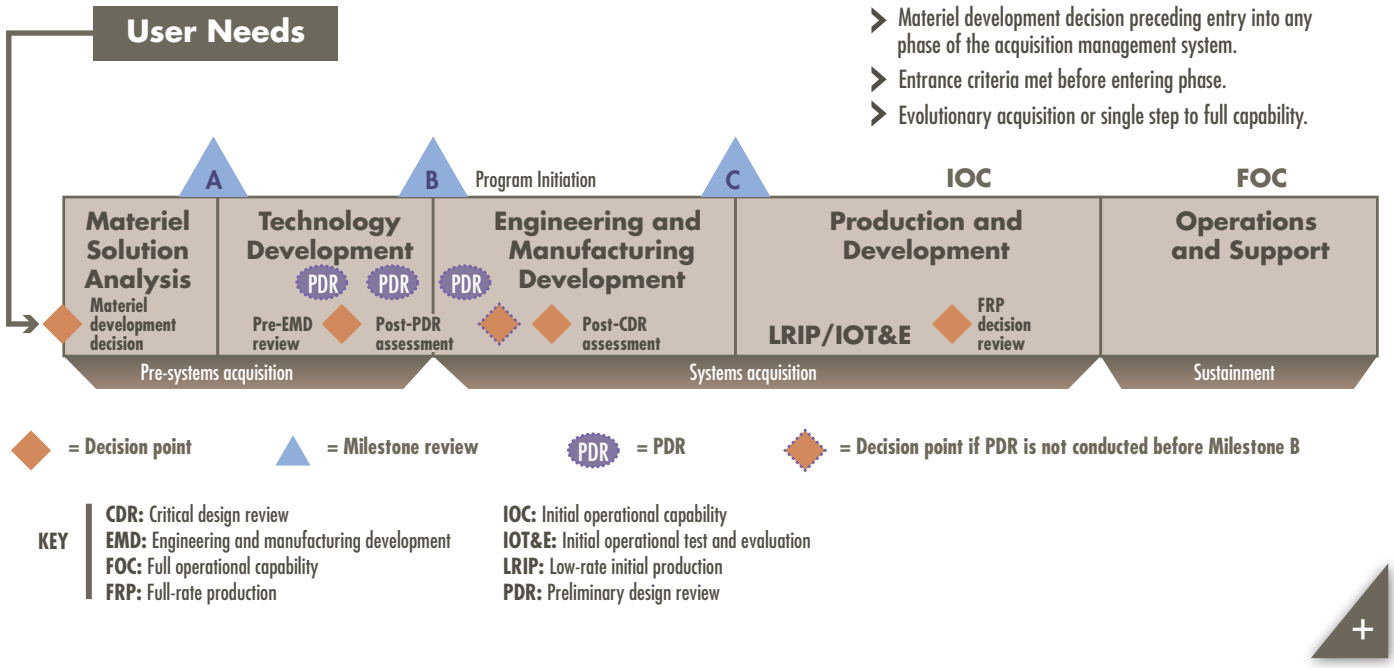
There is little consensus on streamlining in the defense acquisition community; everyone has a different definition and purpose. Nonetheless, the smaller programs are hit with time- and resource-consuming documentation and bureaucracy that often serve no purpose beyond "doing it just to do it." It is the only way we know, or it's the way we have been taught. Program offices employing six to 15 people should not be burdened with efforts that add little to no value. DOD should not expect the same oversight of smaller programs as is required for larger ones. We just don't have the money to do that; we can, however, streamline acquisition by making changes to policy, training and culture.

The Army and the wider DOD are coming to grips with the fact that the global security and operating environment, combined with technology upgrades, is changing so rapidly that certain materiel development processes and procedures that we have relied on for decades are becoming obsolete.

CHANGES TO THE DOD INSTRUCTION 5000 SERIES

The truth is that we, the defense acquisition community, have many complex issues in defense acquisition, and there is no silver bullet to streamline all of them. Acquisition regulations, directives, guidance, policies, education and training are based predominantly on the management of ACAT I major defense acquisition programs (MDAPs). While DOD Instruction 5000.02 states that "[t]he structure of a DOD acquisition program and the procedures used should be tailored as much as possible to the characteristics of the product being acquired,"

FIGURE 1



WORKING THE SYSTEM

Acquisition programs proceed through a series of milestone reviews and other decision points in the course of the product's life cycle. But demonstrating progress toward program milestones should focus on cost, schedule and performance issues rather than time- and resource-consuming documentation and bureaucracy that often seem to serve no purpose. (Image courtesy of Defense Acquisition University)

it does not describe what should be tailored, how it should be tailored, or how the acquisition community would have the wherewithal to understand and perform that tailoring. The instruction then states that the milestone decision authority (MDA) will determine how the program should be tailored, but it does not recommend when that should be done. Frankly, the common guidance should be to tailor at the materiel development decision or the earliest point in the acquisition process, and that it is the MDA's decision after consultation with the acquisition enterprise. (See Figure 1.)

By thinking differently about these smaller ACAT II and ACAT III programs, which have considerably less complexity and fewer budgetary implications, we can generate a different view of processes used to develop and acquire these capabilities. Accordingly, the following activities will help us arrive at the proper mindset, as well as inform modification of the DOD Instruction 5000 series, as appropriate:

- Add more analytical rigor much earlier in the acquisition process. Assign empowered program managers to evaluate acquisition, contracting and logistics strategies as early as two or three years prior to Milestone A or entry into a program of record.

- Focus on the requirements generation process; take a critical look at where technology readiness levels are and will be for the program's needs, and what cost drivers exist.

- Refine requirements and inform the acquisition process by conducting more experimentation and technology demonstrations like advanced technology demonstrations (ATDs) supporting Milestone A. These ATDs will then support analyses of alternatives (AoAs) and studies to provide a clear understanding of need and maximize trade space between program objectives and thresholds within the bounds of cost, schedule and performance, all while keeping competition alive.

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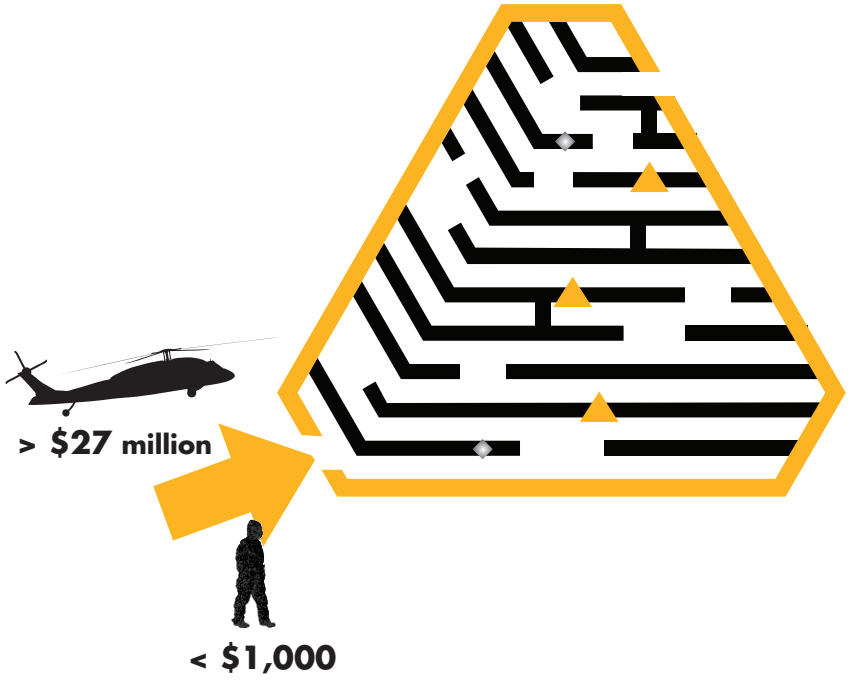
- Conduct AoA and studies. As information is gathered from the ATDs, the community needs to take an objective look at that data as well as input from the prospective users in the field. Additionally, it is beneficial to attend training events and talk with the warfighters. An AoA can be more than just a document with fancy graphs and statistics. Use all of this available information to understand what trade space is acceptable to better inform the objective and threshold requirements in the draft or final capability development document.

- Determine a different path for testing ACAT II and ACAT III programs, one that will provide an effective and suitable level of acceptance but with some risks and assumptions laid out. We spend a lot of time testing with a zero-risk mentality, and that means a lot of time and money. Also, include a feedback mechanism for the user community with respect to test planning. By planning for regular test feedback with the user, trade-offs are made throughout the development of a program rather than at milestones. The result is a more dynamic development cycle that reduces schedule and cost impacts when data indicate performance issues.

FOCUSING MANAGEMENT TRAINING ON ACAT II, III

While the curriculum required to meet Level III certification teaches our workforce how to develop program acquisition strategies, understand contract types, conduct market analysis, execute testing and evaluation, and learn and apply the guidelines outlined in the DOD Instruction 5000 series, it focuses almost exclusively on managing ACAT I MDAPs.

To increase the information and education available to professionals dealing with ACAT II and III programs, we are working with the Defense Acquisition University to develop a workshop on streamlining acquisition for program managers of ACAT III-level programs. The target audience is acquisition personnel from across the Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD) currently certified at Level II or III for program management. As we progress in this course, it should be required for the requirements generation personnel and testing communities so that we can grow together in this team sport.



NAVIGATING A COMPLICATED PATH

Treating all programs as if they are ACAT I introduces cumbersome, resource-consuming and often unnecessary activities into ACAT II and III programs. (Image courtesy of USAASC)

REDUCING MOUNTAINS TO MOLEHILLS
JPEO-CBD recommends that DOD modify the DOD Instruction 5000 series to provide more specific guidance on which documents and processes could be tailored or eliminated for an ACAT II or III program while retaining current the MDA's current discretion. (Image courtesy of USAASC)

CHANGING ASPECTS OF THE ACQUISITION CULTURE

Culture change in defense acquisition is certainly not a new concept, but it would be helpful and informative to add some detail to the discussion. We can improve a number of cultural characteristics that have come to define our enterprise.

ACAT I and ACAT II and III programs can take different risks and should not be held to the same standards. With an eye to reduced budgets and smaller teams, ACAT II and III program managers should consider the U.S. Special Operations Command (SOCOM) acquisition methodology, whereby more performance risks are taken in an effort to deliver new and improved capabilities sooner.

Answer key questions such as, "Are we meeting our most important requirements?" and "Does this system improve the warfighter's ability to complete mission tasks and provide or contribute to overall unit and mission success?" If the answer to these questions is yes, consider tailoring the acquisition to get that capability to the field soonest. Get to the Chevy Cruze first, and then use research and development to get to the Cadillac model, if needed. Take risks and plan for improvements after initial fielding. SOCOM uses the "team sport" concept of users, requirements generators, testers and acquisition program offices rallying to plan, write, advise, test and acquire capabilities and determine support logistics needs; all of this is done with the warfighter in the room.

Involve the test community as early as possible in requirements generation. Debate cost and schedule issues in terms of requirements and testing, and make the difficult choices earlier. Write test plans and requirements to accelerate test schedules while meeting the user needs.

CONCLUSION

Amending policy, improving training and making cultural changes to the way we do business will lead to shorter schedules, lower acquisition costs and, most importantly, needed capability in the hands of the warfighter. The acquisition community is strong and consists of hardworking, smart professionals who work as best they know how to defend our great nation.

We need to start simplifying the way we conduct business in order to provide the joint force the equipment it needs to fight and win on changing battlefields. Working as a team from requirements to logistics sustainability, Big A and little a will be able to work through each program as a product unto itself without the need to be so standardized that we forget our purpose and mission and become e-process junkies instead of capability providers.

For more information, contact Gary Wright at 410-436-6489 or ***gary.wright4.civ@mail.mil****.*

MR. DOUGLAS W. BRYCE, the joint program executive officer for chemical and biological defense, was selected for the Senior Executive Service in February 2010. After 20 years as a Marine, he retired as a chief warrant officer 3 in 1992. He is Level III certified in program management and a member of the Army Acquisition Corps.

The JPEO-CBD's Strategic Operations Directorate, which supports planning and communication activities, contributed to this article.

A NEW WAY OF LOOKING DOWNRANGE

A Soldier operates a prototype Long-Range Advanced Scout Surveillance System containing novel 3rd Gen FLIR components. The beauty of 3rd Gen is that it enables a single camera system to integrate with multiple platforms and missions. Previously, platform developers had to choose between different camera types, each with limitations. Thus, not only does 3rd Gen increase performance, but it also reduces the costs and risks associated with maintaining multiple systems. (Photo by Kay Stephens, U.S. Army CERDEC NVESD)

Not Quite REFORM, *but* IT WORKS

Integration, both a process and a mindset, holds the key to addressing a range of threats to the U.S., from the near-peer to the low-tech.

by Dr. Richard Nabors and Mr. Nathan Burkholder

In the past century, the U.S. military met the developing threats of modern warfare with solutions such as increasing mechanization, nuclear arms and precision-guided missiles, using a deliberate, intentional acquisition process. This process involved highly focused programs typically decades long and often executed by a single large defense contractor. These programs began several years after the establishment of requirements and could take 10 to 15 years of development before implementation.

However, today's dynamic and rapidly changing technological landscape challenges the traditional acquisition process, as emerging technologies and global trends translate to new and unfamiliar threats. Conventional acquisition processes, with their inherent difficulty to adapt to change, limit technological development, and the resulting solutions become irrelevant when restricted to decade-old requirements. This fundamental weakness hampers achieving technological superiority in the modern age, when near-peer threats from China and Russia call for acquisition processes that can provide advanced high-tech solutions with relative quickness. At the same time, the increasing threat of hybrid warfare—which blends conventional warfare, irregular warfare and cyberwarfare—by Russia, Islamic terrorists and others demonstrates that enemies of the U.S. are adapting low-cost, relatively unsophisticated commercial technology far faster than the U.S. military's traditional acquisition cycles can respond.

The short-term solution has been to create new acquisition methods—separate from but parallel to the traditional system—that are more adaptable to the rapidly changing threat. The question remains, however: In these environments, how, exactly, does the U.S. modify its acquisition process to address the need for rapid development and deployment of technology?

The answer lies in integration. Traditional acquisition processes are vertical in structure, usually involving only one contractor. Integrated acquisition processes are horizontal, bringing together multiple contractors and an array of products and processes while crafting the many into a powerful whole. More than just a buzzword, "integrated" describes organizations that are willing to look at themselves in the context of the world around them. They are willing to question their assumptions and have the humility to identify and pivot from courses of action that are no longer optimal. There are numerous examples of organizations and activities that, by implementing integration best practices within acquisition, succeeded in responding to a need faster and with a more diverse array of tools. These examples, which follow, have certain elements in common:

- Creating a culture of proactive problem-solving.
- Developing a framework for inserting cutting-edge commercial technology into military applications.
- Facilitating horizontal integration with industry through structured exchanges.

PROACTIVE PROBLEM-SOLVING

Science and technology (S&T) developers and managers need the freedom to think about potential solutions for rapid integration and adaptation. An organization that is aware of the need for change and its potential benefits plans for and rewards change. It can identify and adapt early to emerging challenges such as the need for intelligence, surveillance and reconnaissance capabilities to counter anti-access and area denial requirements within the Asia-Pacific region, which in turn can create opportunities for the Army and DOD to save significant amounts of money.

Conventional acquisition processes, with their inherent difficulty to adapt to change, limit technological development, and the resulting solutions become irrelevant when restricted to decade-old requirements.

EXPLORING NEW MODELS

A technician uses a platen for creating multiwafer substrates. Multiple substrates are then combined to make infrared focal plane arrays, which provide better performance than traditional technology at a much lower cost. The VISTA program established a new industrial base for focal planes in a model of horizontal integration by promoting an internal culture of integration. (Photo by Dr. Amy W.K. Liu, LQ PLC)

A case in point is the development of third-generation forward-looking infrared (3rd Gen FLIR) imaging technology. This capability was successfully demonstrated on tactical systems in 2007 and has had positive impacts on many high-tech large system platforms, providing the U.S. with significant military advantages over near-peer threats in the Asia-Pacific region and Europe. The main significance of 3rd Gen FLIR is that it uses two different infrared bands that together provide imagery optimized for different missions and environments. Before 3rd Gen, platform developers had to choose from among different

A SENSE OF THE SENSORS

Christine Moulton, lead engineer in the Modeling and Simulation Division of CERDEC NVESD, explains the integrated sensor architecture (ISA) to Maj. Gen. Cedric T. Wins, then-director of force development in the Office of the Deputy Chief of Staff, G-8, during Wins' visit July 13. Wins is now the commanding general of the U.S. Army Research, Development and Engineering Command. The purpose of the ISA is to facilitate DOD's use of cutting-edge sensor capabilities by promoting a common set of protocols and standards for communication and networking among sensor systems, in collaboration with commercial manufacturers and sensor developers. (Photo by Kay Stephens, U.S. Army CERDEC NVESD)

camera types, each with its own limitations. With 3rd Gen, a single camera system can integrate with multiple platforms and missions, reducing the costs and risks of maintaining multiple systems while increasing performance.

Supporting the development of 3rd Gen FLIR is the problem-solving culture created by organizations including the Night Vision and Electronic Sensors Directorate (NVESD) of the U.S. Army Communications-Electronics Research, Development and Engineering Center (CERDEC). Focusing on the value of integration and encouraging its workforce by not penalizing those who question the status quo, NVESD set the stage for the S&T community to proactively identify and promote a shift in direction for established programs.

Rather than taking a passive role and simply responding to requirements, NVESD supported the U.S. Army Training and Doctrine Command in its integration of new requirements into the acquisition cycle based on the emerging capabilities provided by 3rd Gen. NVESD also worked with the program management community, which was fielding systems, to explore the integration of new capabilities provided by 3rd Gen into established program plans with minimal disruption and maximum benefit.

"By emphasizing the value of integration within our workforce, our engineers and scientists were sensitized to the value of developing with change in mind," stated Dr. Donald A. Reago Jr., NVESD director. "This paid huge dividends in enabling our staff to support others with integrating emerging technologies into conventional acquisition programs."

The U.S. military is now integrating 3rd Gen FLIR technologies across multiple platforms, including the Stryker and the Joint Strike Fighter.

COMMERCIAL TECHNOLOGY INSERTION

Organizations that recognize the value of deliberately planning for future unknown technology can take advantage of development opportunities to insert cutting-edge technologies fast enough to be operationally useful. Establishing frameworks for inserting commercial technology allows the military to develop solutions that can adapt rapidly in response to hybridized or near-peer threats, even within complex systems with long lead times. This framework enables acquisition to leverage areas of technology experiencing explosive growth.

For example, the global trend toward the "internet of things" is rapidly expanding sensor development within the commercial landscape. For DOD to take advantage of this trend and militarize these capabilities on a timely schedule for the plethora of military systems using sensors, an integrated sensor architecture (ISA) is necessary to provide a framework for incorporating future sensor technologies as yet unknown.

There is a push within DOD to establish an ISA, which involves working with commercial manufacturers and sensor developers to promote a common set of protocols and standards for how the sensor systems communicate and network. (See "Hybrid Threats, Hybrid Thinking," Army AL&T, January-March 2015.)

HORIZONTAL INDUSTRY INTEGRATION

Horizontal integration enables the U.S. military to develop conventional, large military systems using the "best of the best" from across the entire industrial base. Traditional acquisition practices have tended to promote a vertical integration framework, whereby large defense contractors develop isolated systems and component technologies with proprietary interfaces that significantly limit the ability for innovation and cross-pollination from other companies and industries.

The sensor community recently developed and successfully demonstrated a horizontal integration model in the Vital Infrared Sensor Technology Acceleration (VISTA) program. (See "Breaking Barriers to Innovation," Army AL&T, July-September 2016.)

The model incorporated the following critical aspects:

- Engaging the user community.
- Using trusted entities to share breakthroughs between competitors.
- Facilitating industrial buy-in.

The key to the success of this model was in how the government organizations involved saw themselves as "trusted entities," whose primary role was to facilitate vigorous dialogue and information exchange among all of the competing contractors. Additionally, these trusted entities used their position to distribute government-funded intellectual property across the entire industrial base.

This enabled a far greater number of defense contractors to participate and build on previous technical successes than a traditional, vertically integrated acquisition would allow. It also helped ensure the development of systems in which no single entity was the sole proprietor. This significantly reduced the risk that closed, proprietary systems would limit participation, innovation and collaboration by other third parties in the future.

Successful programs such as VISTA, which established a new industrial base for focal planes, have demonstrated how

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TALK TO ME

The ISA establishes standards that bring together sensors within an area of operation so they can communicate without requiring physical integration. This approach is an example of how organizations applied integration best practices within acquisition to bridge the gap between the high- and low-tech threats facing the U.S. (Photo by Edric Thompson, U.S. Army CERDEC)

organizations can have radical impacts on the acquisition process by promoting an internal culture of integration.

CONCLUSION

One of America's greatest assets in overcoming the challenges posed by the complex threat environments of today and the future is the optimism of its people and their ability to achieve what they put their minds to. This mindset is evident in the innovative solutions and entrepreneurial spirit that are alive and well within the industrial base.

Creating models and frameworks that allow defense acquisition to tap into this resource is critical to harnessing the country's strengths to provide long-term U.S. military dominance. Government organizations that intentionally and systematically see themselves as facilitators of integration with industry, rather than competitors of industry, are redefining acquisition.

While reimagining defense acquisition could take decades, the military is already demonstrating how significant improvements are possible within existing acquisition processes, through bottom-up execution. Whether it is the 3rd Gen FLIR community developing an organizational culture of problem-solvers, the development of an integrated sensor architecture providing a framework for technology insertion or the VISTA program facilitating productive engagements with industry, the power of integration is at the core of these successes. This focus on integration is a mindset that permeates everything the organization does, with cascading effects across the entire enterprise.

Acquisition policy reform is needed, but positive changes are already happening, and much can be learned from organizations that have taken steps to shape acquisition processes to meet the dynamic environments of today and tomorrow.

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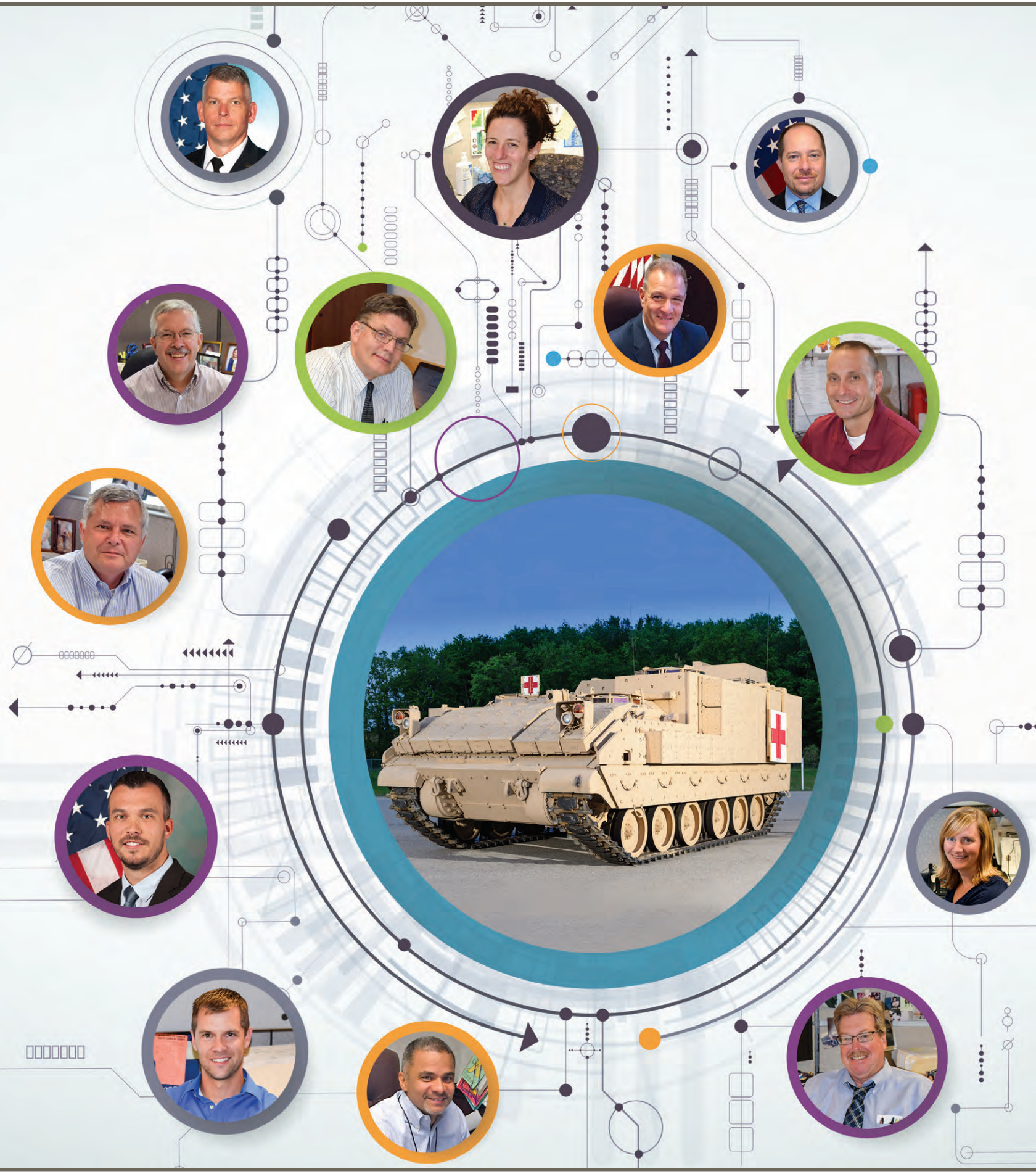


FROM THE DIRECTOR,
ACQUISITION CAREER MANAGEMENT
LT. GEN. MICHAEL E. WILLIAMSON

ACQUISITION *AS A* TEAM SPORT

To deliver complex capabilities to the warfighter takes a lot of different players, all focused on the same mission

"The achievements of an organization are the results of the combined effort of each individual."

—Vince Lombardi

We often hear that "people make a difference" and "relationships matter." Well, in Army acquisition those statements are the very foundation of successful programs. Strong leadership, clear communication, focused teamwork and the resulting bonds of trust—within the program office and with stakeholders—are vital in procuring and fielding capabilities that enable our warfighters to fight and win decisively.

There are many success stories about meeting the needs of our warfighters through teamwork. One that comes quickly to mind is the Joint Mine Resistant Ambush Protected (MRAP) Vehicle Program. MRAP was fielded in unprecedented time to U.S. and coalition forces to provide enhanced mobility and force protection from improvised explosive devices and other threats. The Joint MRAP team, the Joint MRAP enterprise, delivered highly survivable vehicles that saved lives—more than 27,000 lifesaving vehicles in less than five years!

In December 2009, then-Joint Program Manager Paul D. Mann wrote, "No matter how cliché our continued pronouncement of the importance of teamwork is … we will not let the Warfighters down … we will Rock and Roll our way to victory." He continued, "The ultimate team sport is fed by the ultimate irony: team excellence springs forth

A WELL-OILED MACHINE

Behind the success of the new Armored Multi-Purpose Vehicle (AMPV) that the Army is developing for the armored brigade combat team, on budget and on schedule to deliver the first prototype in December, is a host of details: requirements, planning documents, design specifications, cost estimating, scheduling, approvals and much more. Organizing and managing those details, in constant communication and collaboration with dozens of stakeholders in the program from the manufacturer to the Pentagon to Capitol Hill to the Soldier-user, is a broad and diverse team of acquisition professionals dedicated to delivering the AMPV to the warfighter for enhanced force protection, survivability, mobility, and improved situational awareness and network connectivity. (Illustration by U.S. Army Acquisition Support Center)

from individual excellence when underpinned by an unquenchable pursuit of being a great teammate and building trust throughout the Enterprise! Our most effective teams and most dramatic progress are evident as we practice these principles in all of our affairs." (Note: Mr. Mann is now a member of the Senior Executive Service and executive director of the White Sands Missile Range in New Mexico.)

My focus for this column is on the people behind the Army's new Armored Multi-Purpose Vehicle (AMPV), which is in development for the armored brigade combat team (ABCT). The AMPV family of vehicles consists of five variants to resupply the formation; conduct battle command functions; deliver organic indirect fires; provide logistics support and medical treatment; and perform medical and casualty evacuation. What AMPV will mean to future warfighters is further enhanced force protection, survivability and mobility, as well as the power of situational awareness from an inbound Army network and other future technologies.

With nearly 50 stakeholders, including officials across the Army, the Office of the Secretary of Defense (OSD), the Office of the Chairman of the Joint Chiefs of Staff, the Defense Contract Management Agency (DCMA), Congress, the manufacturer and contractor BAE Systems, and the user-Soldier, the AMPV program is on budget and on schedule to meet the first prototype delivery in December. Here is a look at some of the professionals who comprise the AMPV team.

THE TEAM IN ACTION


Col. Michael "Mike" Milner

The AMPV Project Manager, **Col. Michael "Mike" Milner**, has been project manager (PM) since 2014, and as such has overall responsibility for the program's performance, cost and schedule; workforce development; and communication with all stakeholders. To lay the groundwork for program success, he established and communicated a common vision of the program. He also worked closely with the Army staff to manage requirements that challenged the program's intent. "Working with my peers to prepare the Army position on requirements adjustments," he said, "enabled us to balance the performance, cost and schedule of the program through the Army Requirements Oversight Council [AROC], which is chaired by the Army chief of staff."

Milner, who works for the Program Executive Office for Ground Combat Systems (PEO GCS), maintains regular contact with stakeholders when visiting various locations, namely the Pentagon, Fort Benning, Georgia, and others, to continuously communicate the status of the program, maintaining transparency on where the program is headed and requesting support or guidance when and where needed. "Open, honest, transparent and frequent communication of program status and how stakeholders can support us is a major factor in the program's success," he said.

His prior assignment as the portfolio manager for combat vehicles in the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology (OASA(ALT)) enabled him to establish contact with stakeholders and understand the Army's intent for the AMPV program from the beginning. "This allowed me to advance the program in the face of requirements challenges that I felt were outside the intent the Army had for the program," he said. "The relationships developed and maintained allowed the program to find common ground and work through the challenges to balance the performance, cost and schedule."

With 28 years of service in the Army and 17 years in the Army Acquisition Corps, Milner is Level III certified in both program management and contracting. He has an MBA from Clemson University and a master of strategic studies from the U.S. Army War College, in addition to a BBA in marketing from Georgia State University. In his first acquisition job, as a contingency contracting officer with U.S. Army South in Puerto Rico, he learned the importance of flexibility and teamwork in developing requirements and supporting the mission.

When he became product manager for Excalibur, he learned the power of stakeholder support and the ability of his team and the contractor to formulate and execute plans when the chips were down—a software failure disabled all the projectiles just days before the initial operational test and evaluation (IOT&E). While waiting for a flight, Milner received a call from his deputy, who, working with the contractor, came up with a plan to retrofit the munitions. This would require them to be shipped, broken down, updated, reassembled and returned to White Sands Missile Range for testing.

Milner was pleased that, in the absence of details, his leadership supported him. "When I briefed the Operational Test

A UNIVERSE OF KNOW-HOW

The AMPV program requires expertise from a vast array of specialties to succeed, including but hardly limited to the knowledge and experience of these AMPV team members: from left, Deputy Product Manager for Integration Ed Lewis; Lead Systems Engineer and Systems Engineering Branch Chief Corey DeSnyder; Director of Engineering Kevin Houser; Deputy Project Manager Tom Landy; and Lead Cost Analyst and Operations Research Analyst Ryan Lasecki. Many members of the AMPV team attest to the value of a variety of experiential opportunities as well as education in building their programmatic and team-building skills. (U.S. Army photo courtesy of PEO GCS)

Command officials, the test community dove into the problem and laid flat every issue associated with the repair of the rounds," Milner said. "In the end, we started IOT&E three days late and completed on time. It was a great example of an extended team coming together to solve a complex problem."

His advice to others in the Army Acquisition Workforce is to remain flexible and know that the system is adaptable. "While, from the outside, the acquisition process might seem rigid, it is actually very flexible," Milner said. "But, in order to exercise that flexibility, you have to establish trust with the stakeholders responsible for oversight to ensure you are doing the right thing for the Soldier and the taxpayer. Trust your team. They are smart. Point them in the right direction and adjust as needed. Give them the resources to succeed."

Thomas "Tom" Landy

AMPV Deputy Project Manager **Thomas "Tom" Landy**, a civilian with more than 25 years of experience in program management, was competitively selected for the position in June 2014. At this stage of the program, his primary stakeholder interactions are with officials at the U.S. Army Training and Doctrine Command (TRADOC) Maneuver Center of Excellence (MCoE) regarding requirements issues and with acting Deputy Assistant Secretary of Defense for Systems Engineering Kristen J. Baldwin regarding programmatic assessments of systems engineering reviews.

Landy's approach to successful stakeholder involvement is based on PEO GCS' command philosophy:

- Fundamentals—Maintaining integrity through solid engineering and design analysis, and test planning that balances cost, schedule and performance risk.
- Transparency—A willingness to be open about emerging issues and look to stakeholders as assets for assistance in resolving issues before they can impact the program.
- Realism—Establishing realistic schedules and expectations, and meeting them.

Landy pointed out that stakeholders share a common interest—the success of the AMPV program. "Our relationships have evolved over time from one of 'oversight-audit-problem finding' to one of collaborative identification and resolution of issues," he said. "Our stakeholders help the AMPV program proceed while meeting the intent of acquisition policy and regulations, and they work well with us to tailor expectations when taking into account some of the fundamental assumptions of the AMPV program."

As an example of efficiency, he noted that the AMPV Product Assurance and Test Directorate's efforts with the OSD and Army test communities have not only controlled program costs but also reduced schedule risk. In addition, from an execution perspective, the program's collaboration with the MCoE has been instrumental in looking at requirements at all levels (including key performance parameters) and conducting operational risk assessments to determine whether the AMPV's design is still operationally suitable and effective. That, in turn, will set up the program for greater success during engineering and manufacturing development (EMD) test activities.

Landy worked for several years on the Future Combat Systems program, eventually leading the 80-person System of Systems Engineering and Integration Directorate, where he learned that "time was my most valuable resource." He said, "There was never enough time to try and address every issue—the position forced me to focus on those issues most critical to my organization's success and the needs of the associates working for me."

He also chaired the source selection evaluation board for an acquisition category (ACAT) I program, which taught him how industry responds to government-issued requests for proposals, how to push industry to address critical needs, and the dynamics of senior-level decision-making. He also was the deputy product manager for requirements management and analysis for the Ground Combat Vehicle program, which taught him how to see a program from the stakeholder's perspective.

Landy believes that the greatest satisfaction with the AMPV program will be when "we hand off the first unit set of AMPVs." Until then, he said, satisfaction comes at smaller levels—making decisions that maintain program continuity while balancing risk, seeing associates digging into execution issues and finding solutions, and responding to external stakeholders' concerns and seeing their approval of what the program is doing.

His advice to others is to seek diversity in assignments—learn about the different functions required to execute an acquisition program (contracting, financial management, logistics, test, organizational construct, etc.). "Compete for positions on smaller acquisition programs that will require greater self-reliance and responsibilities than what you may be exposed to on larger programs," he said. "Seek professional development training on leadership, management, supervision, negotiation, consensus building and stakeholder management."

"Open, honest, transparent and frequent communication of program status and how stakeholders can support us is a major factor in the program's success."

Landy is Level III certificated in both program management and engineering with a B.S. in chemical engineering from the University of Detroit and an M.S. in hazardous waste management from Wayne State University's School of Chemical Engineering.


Kevin Houser

AMPV Director of Engineering **Kevin Houser** has 34 years of experience, along with an M.S. in computer and information systems from the University of Detroit Mercy and a B.S. in mechanical engineering from Wayne State University. He's Level III certified in engineering and in program management. He oversees two engineering branches, comprising 25 engineering personnel who serve as an integrated product team (IPT) in concert with the manufacturer's engineers to design, develop, integrate and test AMPV systematically.

Experience has taught Houser that the Army typically wants an item faster (how can you speed up delivery and fielding?); bean counters want it at less cost (what can you do to make it cheaper?); the user representatives want more capability (requirements creep: What if we added this?); and the oversight team wants to ensure that whatever happens is traced to a document, i.e., a reduction in requirements can still be traced to the capability development document (CDD). A balanced approach allows the PM to reduce the tensions among the stakeholders and stay on track to deliver a vehicle that is "good enough without gold plating."

Houser champions value engineering projects in which the program introduces a change that results in cost savings. So far with the AMPV program, the team has identified changes to the quantity of armor tiles required to support the prototype vehicle test program, which saved just over $1.5 million. This required numerous consultations with the test, engineering and acquisition communities and with BAE Systems. He indicated there may be potential for future cost savings as well.

His advice to others is a credo he's carried with him since working for the Navy as a young engineer: "Support the mission first and don't say no to an opportunity." He is extremely proud of the AMPV engineering team, which, along with the manufacturer, has driven since day one to achieve a first-production prototype build within two years of the program's start. "We have the best people on the team," he said. "We've proven we're the varsity."

Joseph C. "Joe" Perri

AMPV Director of Product Assurance and Test **Joseph C. "Joe" Perri** has 33 years of experience, a B.S. in engineering from the New Jersey Institute of Technology, and Level III certification in test and evaluation; project management; systems engineering; and production quality and manufacturing.

Perri serves in the key leader position for test/lead developmental tester responsible for detailed planning, preparation, integration, execution and reporting of developmental, operational and live fire testing. He is also responsible for system assessment of reliability, availability, maintainability and testability, and for quality assurance and quality engineering of hardware and software. He and his team help stakeholders evaluate the system; currently, they work primarily with the OSD and Army test communities.

He credits the careful planning and review of the test and evaluation master plan, in collaboration with OSD test officials, as a strong predictor that there will be no issues or surprises as to how tests are conducted. "Early one-on-one, face-to-face reviews and working-level meetings with test officials in OSD have built trusting relationships," Perri said. "In an environment of the internet and email, good old-fashioned meetings still add an important element to the process."

Perri said he learned from one of his first bosses that there is no compromising integrity—nor, he adds, the needs of the Soldiers. "I also learned that relationships with the Office of the Secretary of Defense, the Army Test and Evaluation Command, test centers and contractors are not built by sitting at your desk," he said. "There is no substitute for personal engagement."

His advice to others is to learn as much as you can from the programmatic side (how the acquisition process works, how the funding works, how programs get approved and go forward), and become an expert in your area of interest. "You need to know how the Army acquisition cycle works, and you need to be respected in your technical area of interest," he said. "Your knowledge of both will help you build trust."

Ed Lewis

Deputy Product Manager for Integration **Ed Lewis** keeps his focus on program management. He has 29 years in the workforce, is Level III certified in both management and engineering, and holds a master's in management science and a bachelor's in industrial engineering, both from Ohio State University. A member of the program's initial team, he is very proud of the synergy within the program office and with stakeholders, as well as how far the program has come.

Lewis and his team are responsible for design, integration and test of the Mission Command variant of the AMPV; the execution of the acquisition strategy to accelerate AMPV fielding to support the European Reassurance Initiative, in which DOD seeks to reassure our NATO allies and bolster the security and capacity of our partners; the supply chain management of the AMPV prototype build and negotiating the low-rate initial production option; and any future AMPV initiatives. In his involvement with stakeholders, Lewis said his communications are open and transparent to gain an understanding of everyone's interests.

Lewis said that, from his standpoint, three major factors contribute to the success of the AMPV program through stakeholder involvement.

The first is user and materiel developer coordination in developing the CDD and associated performance specification (PSpec).

There were multiple meetings between the user and materiel developer to ensure achievable requirements given the acquisition strategy and available technology, he said. "We also had an independent technical team of subject matter experts review our PSpec for clarity and achievability."

The second is industry days. AMPV hosted two industry days that provided valuable feedback on performance specification and the contract scope of work. These two engagements led directly to PSpec and CDD modifications.

Finally, Lewis cited "knowledge points," the venue whereby the PM kept senior Army leaders aware of program status and requested decisions. It also was the venue that initiated a CDD change based on feedback from industry days, which resulted in a revised CDD in 60 days.

Lewis advises members of the workforce who aspire to leadership positions to focus on current responsibilities and do the best job possible without worrying about the next job. He said it is important to learn as much as you can from your present position and make sure to obtain appropriation certifications, as well as to seek developmental opportunities.


Ryan Lasecki

Lead Cost Analyst and Operations Research Analyst **Ryan Lasecki** is charged with estimating the program's full life cycle costs. In this position, he works with many stakeholders throughout the Army and OSD, as well as the engineers, logisticians, and members of the contracting and test communities to make sure that everyone understands what should be included in successfully designing, producing, fielding and sustaining AMPV.

With a bachelor's in business administration and management from Western Michigan University and an MBA from Lawrence Technological University, Lasecki is Level III certified in business (cost estimating) and in business (financial management), and Level I certified in program management.

Lasecki is always looking for ways to help reduce both production and sustainment costs. A mandate from the Milestone B Defense Acquisition Board meeting with the Hon. Frank Kendall, the undersecretary of defense for acquisition, technology and logistics, was to establish should-cost initiatives. Because the AMPV program has "a good amount of government-furnished material" from other programs, a plan was conceived to reduce costs by not buying all the equipment needed for testing purposes, but instead borrowing or reusing hardware already in the inventory. The result was a savings of $4 million in FY16 alone.

In Lasecki's view, the AMPV program is successful because there is a good mix of younger, energetic people and seasoned employees who help focus the program with historical knowledge. Additionally, he said, the program office is roughly 100 people, and all employees are empowered to make or recommend decisions without going through layers and layers of management.

His career advice is to be like a sponge and soak up all the information you possibly can about the program you are working on. "Don't just stay in your functional stovepipe," he said. "Get out and see what others are doing, and see if you can add value to their ideas."


Steve Herrick

Steve Herrick was the system acquisition manager and DA systems coordinator (DASC) until his recent move to the PEO for Combat Support and Combat Service Support. With more than eight years of civilian service as a CP-51 in the Army Acquisition Corps, he is Level III certified in both program management and engineering. He holds a B.S. in biomedical engineering from Lawrence Technological University and an M.S. in program and project management from the University of Michigan.

Herrick's approach to stakeholders is to understand what makes them tick and what their "true position" is on a given subject. He knows the value of communication and regular updates. "One thing I learned is that each stakeholder is needed critically at any given time, and having personal relationships allows for amazing communication," he said.

As a civilian, Herrick deployed as the lead engineer in Afghanistan for the MRAP and fielded the first MRAP All-Terrain Vehicle in Operation Enduring Freedom. "This gave me a better

The team has identified changes to the quantity of armor tiles required to support the prototype vehicle test program, which saved just over $1.5 million. This required numerous consultations with the test, engineering and acquisition communities and with BAE Systems.

understanding early in my career how the operational Army works," he said, "and what our true job is as acquisition professionals—to produce safe, suitable, supportable and survivable products for the critical needs of our warfighters."

Herrick believes that a major factor in AMPV's program success was shaped years ago by the late Maj. Gen. Harold J. "Harry" Greene, then the ASA(ALT)'s deputy for acquisition and systems management; Col. William Sheehy, then the PM for the ABCT; and Ed Lewis, then a deputy product manager on special assignment from the Bradley program office. Herrick said Greene was the beacon that kept AMPV on the agenda in senior Pentagon leaders' meetings and in the executive summaries that followed; at the time, the AMPV program was preparing to release its request for proposals for the EMD phase, and Greene's counsel and leadership kept the program tracking through its reviews with senior leaders and helped manage the expectations of all involved. Herrick credits Sheehy and Lewis with devising plans to rotate a steady flow of AMPV program office personnel through the Pentagon as DASCs to keep the program in the forefront and shepherd it through its reviews.

"A colleague and I combined for 16 months of the two-year 'rent-a-DASC' phase," Herrick said. "We came back to the program office, shared our experiences and explained to other AMPV personnel what these stakeholders at the Pentagon do and how the process 'actually' works."

Herrick said his greatest satisfaction in being a part of the AMPV program "was the feeling of family. We came to work and had fun." The program office got through multiple acquisition strategies; protests; congressional meetings, issues and reports; milestone documentation; meetings; long hours; no support and too much support; and awarded a multibillion-dollar contract to support and produce a product our Soldiers need. "I can't say it enough: AMPV personnel are some of the finest professionals, friends and people I have ever known," he said.

His career advice is to never turn away from challenge or adversity, because either or both can lead to great and unexpected things. "Get out of your comfort zone and move around in your career field," he said.


William "Bill" Cuneo

Director of Logistics and Product Support Manager **William "Bill" Cuneo** has 35 years of service, a B.A. in English and Level III certification in acquisition logistics. He came to the AMPV program seeking a change after several years in various positions culminating as the logistics director for the Stryker family of vehicles. It was there that he learned everything from early life cycle analysis and testing to vehicle condemnation and demilitarization—during a time of war. "It was one continual Defense Acquisition University class with a whole lot of real-life examples," he said.

Cuneo said his logistics team at AMPV interacts with primary stakeholders during quarterly supportability IPT meetings that address all 12 product support elements; working group meetings, usually weekly, that focus on a subset of the 12 product support elements; and milestone events. Behind the scenes, he said, there is a constant flow of emails, teleconferences and one-on-one discussions that flesh out issues and challenges that need addressing, risks that need mitigating and proposed courses of action to be evaluated on the way to a decision or path forward.

"I believe in early and constant communication with all stakeholders," Cuneo said. "Bad news does not get better with age, and the sooner we know the bad news, the more time we have to develop a solution. The more brains we have working on the problem, the more likely we are to come up with a good fix."

Cuneo said that the AMPV program was unusual in that, upon contract award, it immediately entered Milestone B. This

presented a few challenges, as a number of milestone documents are usually required for Milestone B. Many of these documents could not be provided at that time because they required that a defined materiel solution be in place, which could not have occurred for this program. "Given the close ties and level of trust that we had developed with all our stakeholders over the many months leading to contract award and entering at Milestone B," Cuneo said, "it was a relatively easy process to get all the stakeholders' buy-in to defer a number of logistics milestone documents until well past Milestone B." That ensured a more useful set of documents in time to benefit and inform the program.

His career advice is to take the "tough" jobs. Seek to be challenged. You will grow and learn. Said Cuneo: "Mistakes are OK as long as you learn from them."


Amy Kozlowski

Program Officer for Acquisition **Amy Kozlowski** is assigned to the AMPV Mission Command variant. With nine years of civilian experience, Kozlowski has an MBA, an M.S. in mechanical engineering and a B.S. in mechanical engineering, all from Lawrence Technological University. She is Level III certified in both program management and engineering.

Kozlowski came to the AMPV program in January 2014, before Milestone B, following a developmental assignment within OASA(ALT) at the Pentagon. She is responsible for managing cost, schedule and performance for efforts related to the AMPV Mission Command variant, including the complexities of network integration.

She works primarily with stakeholders that represent the user—the TRADOC capabilities managers (TCMs) for the ABCT within the MCoE at Fort Benning. "We come to a better understanding of the users' interests through face-to-face discussions on requirements and through requirements decomposition," Kozlowski said. "We did this with the support of the MCoE's Mounted Requirements Division during requirements development prior to RFP [request for proposal] release." Detailed discussions continue throughout EMD in working groups to review preliminary and detailed designs.

"Bad news does not get better with age, and the sooner we know the bad news, the more time we have to develop a solution. The more brains we have working on the problem, the more likely we are to come up with a good fix."

This detailed attention ensures not only that the PM clearly understands user requirements and translates them appropriately into a PSpec and scope of work, but also that the manufacturer meets the requirements in executing the design, she said. The ultimate goal is to produce an AMPV that meets the Soldiers' needs, expectations and operational requirements.

Kozlowski said her greatest satisfaction in being part of the AMPV program came with a decision to turn the manufacturer on for a third workstation. The original CDD for the Mission Command variant called for a minimum of two workstations with an objective of up to four. Additional analysis from operational exercises determined that the vehicle would need at least three workstations. TCM officials believed the program team could work with the manufacturer to design for three workstations with no disruption, but AMPV program personnel had to coordinate with stakeholders to make the change and support the cost increase to each vehicle.

Working through the AROC, they obtained concurrence from Army leadership to pursue a design update and increase the capability. This high-level support enabled the program office to work with the contracting center quickly to enact the required changes, directing the contractor to update the design to include three workstations, thus allowing the vehicle to carry additional support personnel. The requirement was clarified after the contract award.

It was "a good example of a series of interactions over several months with the TCM, and eventually broader stakeholders as the issue was briefed up to the Army chief of staff at the AROC," Kozlowski explained. There were a number of key considerations

to discuss with the TCM representatives, some face to face, to understand the reasons for adding a workstation as well as the challenges and constraints—fiscal, contractual, schedule-based, etc.—of executing the change.

Then, Kozlowski said, "We were able to come together to successfully communicate this requirement clarification at the AROC." Now, she said, "we are in process of executing a contract modification to have the manufacturer integrate the third workstation for EMD prototypes. This is a win for the Soldier."

Kozlowski said her prior work experience prepared her well for this job. Her two most recent assignments, as the assistant product and project manager (APM) on the Bradley program and as part of OASA(ALT), gave her valuable experience. "My Bradley APM experience helped me to understand the APM roles and responsibilities," she said. "My time in the Pentagon on developmental assignment provided me with unparalleled experiences in seeing senior Army leaders from various stakeholders, staffs and functional areas in action." She came to understand in depth the interests of all the key players in the acquisition community and how they all worked together at the most senior levels, she said. "This is tremendous insight to be able to bring back into a PM and into an APM role."

Kozlowski's career advice is to recognize the critical importance of being able to manage the details and see the big-picture strategy at the same time.


Corey DeSnyder

Lead Systems Engineer and Systems Engineering Branch Chief **Corey DeSnyder** has seven years of service as a civilian and 11 years as a government support contractor. He has an M.S. in systems engineering from Johns Hopkins University and a B.S. in aerospace engineering from the University of Michigan. He is Level III certified in systems engineering and Level I certified in program management.

DeSnyder leads the Systems Engineering Integration Team, which is in charge of technical design decisions for the program with configuration control of the PSpec and systems engineering plan. From his vantage point, he sees that "finally," DOD as a whole is willing to make the performance trades necessary to field a vehicle within cost and schedule constraints. "Too many times," he said, "we get promised the full set of requirements fast and cheap and, therefore, get stuck with cost and schedule overruns with a subset of functionality."

DeSnyder is prepared for his role with the AMPV program because of his prior experience as an engineer on the Joint Strike Fighter program, handling airborne software. "I was part of the initial stages of that program that culminated in the system development and demonstration contract," he said. "I saw firsthand how competition drove a lower-cost proposal on a cost-plus contract, which resulted in cost overruns and functionality delays from the start. I was able to convey those observations when the AMPV competition had similar results, and we were prepared to present trade-offs that needed to be made against cost, schedule and performance." The difference with the AMPV program is that those trades still stayed within cost and schedule, he noted.

His career advice is to build your background experience. "Don't get pigeonholed in one program and in one technical area," he said. "It helped that I had experience in a joint program."


Juan Carlos Santiago

Architecture Lead **Juan Carlos Santiago** has 18 years of civilian experience, a B.S. in electrical engineering and a master's in engineering management from the New Jersey Institute of Technology. He is Level III certified in engineering. Santiago is responsible for managing development of the system architecture and ensuring that it remains in sync with requirements and design. He said AMPV is using a process developed by the U.S. Army Tank Automotive Research, Development and Engineering Center (TARDEC), the Ground System Architecture Framework (GSAF).

Aside from working with the AMPV manufacturer to ensure that the architecture is developed in accordance with GSAF and aligned with requirements and design, Santiago works with TARDEC systems engineering personnel to support the maturation of the GSAF process. "I consider both the manufacturer and TARDEC to be my stakeholders," he said.

His greatest satisfaction is getting through a critical design review, and he looks forward to the first prototype delivery

in December. A lot of tough decisions have been necessary to balance cost, schedule and performance, but the leadership and personnel on the AMPV program made that possible, Santiago said.

His career advice is to work hard, keep open lines of communication, and always understand your end goal so that you can develop achievable steppingstones to get there.


Tom Lazenby

Director of Business Management and Program Analysis Officer **Tom Lazenby** leads three teams within AMPV's business management office: cost estimating and analysis; resource management; and performance measurement and program reporting.

The cost team works primarily with OSD and Army officials and generates cost estimates that support program-level decisions, trade studies, and "what if" exercises. In addition, it monitors the contractor's affordability processes and assesses its progress in meeting program cost targets. The resource management team, working with similar stakeholders, develops, justifies and executes the AMPV budget.

The performance measurement and program reporting team oversees the earned value management program and generates program-level reports, such as the defense acquisition executive summary and selected acquisition report. It works with DCMA as well as the OASA(ALT) reporting staff.

With 29 years of civilian service, Lazenby holds an M.S. and a B.S. in industrial and systems engineering, both from the University of Michigan – Dearborn. He is Level III certified in both business (financial management) and program management.

"From my perspective, the primary stakeholders are interested in ensuring that the program has adequate resources to do what it needs to do," Lazenby said. "The big thing was realizing that everyone wanted to get AMPV right the first time, in order to avoid the historic problem of programs being underestimated and under-resourced." He said there is a great satisfaction in getting a major new program off the ground, but that "the real satisfaction will come when the program starts fielding a capability to Soldiers."

Lazenby said that in the lead-up to the Milestone B decision, program cost estimates were compared and contrasted, differences were analyzed and, in many cases, the up-front conversation resulted in the estimates converging. As a result, the Army and OSD estimates presented at the Defense Acquisition Board were very close. The Army committed sufficient resources to execute the program, and it has been operating within its acquisition program baseline. Lazenby attributes the success of the AMPV program to open and honest communication.

His career advice is to look for experiences that broaden your knowledge base. "If you want to progress," he said, "do not be content to spend your career in the same office doing essentially the same thing year after year."

"More than anything else," he continued, "it was career experiences that prepared me for this job. Classes help, but there's no substitute for experience."


Courtney Young

Test Engineer **Courtney Young** joined the AMPV test team less than a year ago to focus on medical vehicle variants. With a B.S. in biomedical engineering from Michigan Technological University, Young is Level III certified in engineering; Level II certified in test and evaluation; and Level I certified in life cycle logistics. She leads the planning for a medical demonstration event to help verify several requirements specific to the medical variant AMPVs. This involves coordination with stakeholders from the MCoE, the U.S. Army Medical Department Center and School and the U.S. Army Evaluation Center.

Young also works with program, product and project offices that will provide products to be fielded on the AMPV in order to plan new equipment training (NET) for test personnel during the EMD phase. Her interaction with stakeholders is on a daily, weekly and monthly basis, with face-to-face meetings for IPTs, working groups and technical reviews. "It's always best to address program challenges as a group so that we can provide the best-value mitigation and path forward for all parties," she said.

Young came to the AMPV program office from the Edgewood Chemical Biological Center in Aberdeen, Maryland, where she

CLOSE AND CONSTANT COMMUNICATION

DeSnyder, Houser and Lasecki meet to discuss progress on the AMPV program. A recurring observation among members of the AMPV team was that nothing beats face-to-face interaction to build relationships with program stakeholders and cement a common understanding of program goals and objectives. (U.S. Army photo courtesy of PEO GCS)

started as an intern. Her supervisors there supported her career development. "I was fortunate to be afforded every opportunity for professional training," Young said. "The most rewarding training experience for me was the Joint Senior Leader Course at Fort Leonard Wood, Missouri. "I was the youngest student in the course by far and very grateful for the opportunity to learn from such experienced colleagues." The course provided her with a great foundation for understanding how joint organizations function together, and provided unique experiences that helped her understand the user perspective. She also said that attending fielding, NET courses, and operational tests and demonstrations were excellent developmental experiences for her as a young engineer.

The "sense of purpose" is her greatest satisfaction in being part of the AMPV program. "The whole team really is driven to develop the best-value product to support the Army mission," Young said. "We also are a working family who cares genuinely about each other, both inside and outside the workplace."

"You need to know how the Army acquisition cycle works, and you need to be respected in your technical area of interest. Your knowledge of both will help you build trust."

Young said that team collaboration is always the key to successful stakeholder involvement. "After relationships are developed, compromise and balance are easier to achieve," she said. "Regular meetings are essential in keeping the lines of communication open for successful resolution of any issues." Open and honest relationships with stakeholders are critical, she said. "Never attempt to bury issues under the rug. Be open and honest with your stakeholders, and they will be willing to help you mitigate problems because we are all working toward a common goal: to support the Army mission."

CONCLUSION

Several things are abundantly clear from the experience of the AMPV program as it stands. First, a successful program is built on a firm foundation—with stable requirements and proper funding.

Second, program leadership is important, both in assembling a team and keeping it focused on the mission and its important roles in achieving that mission. Third, diversity of assignments and "tough" jobs create an experienced workforce ready to take on new assignments. Fourth, open and honest communication at all levels—vertically and horizontally—is vital.

Finally, highly engaged stakeholders contribute significantly to an acquisition program's success!

A STRONGER COBRA

A Bell AH-1Z Zulu helicopter, foreground, and a Bell UH-1Y Yankee helicopter fly over Marine Corps Base Camp Pendleton, California. The Yankee and Zulu replace the two-bladed AH-1W Super Cobra and UH-1N Twin Huey helicopters, and can carry more weight, travel faster and conduct combat operations from a safer distance. With a fully integrated cockpit and more fuel, blades and overall power, the helicopters also can remain airborne longer without having to refuel. (Photos courtesy of Bell Helicopter)

IMPROVING ACQUISITION: AN INDUSTRY PERSPECTIVE

The president and CEO of Bell Helicopter draws on the company's decades of defense experience to provide insights for the way ahead.

Mitch Snyder
President and Chief Operating Officer, Bell Helicopter

by Mr. Mitch Snyder

(Editor's Note: Bell Helicopter Textron Inc. is competing with a team formed by Sikorsky Aircraft Corp. and Boeing Co. to build a prototype for the Army's next generation of vertical lift aircraft, with flight demonstrations anticipated in 2017 to inform the requirements process, followed by designing and building the next-generation aircraft over the next two years as a program of record. The next step would be for the Army to conduct a competitive procurement for a new family of helicopters, with fielding in the late 2020s or early 2030s. This commentary reflects only the opinions of Bell Helicopter; it does not represent the opinions or policy of the Army or DOD.)

Bell Helicopter is honored to have been an industry partner in defense acquisition since 1935. More importantly, we are proud of our legacy as pioneers of transformational equipment that continues to shape the battlefield and meet the ever-changing face of combat. These rapid advancements in technology have introduced precise weapon systems, stealth operations and advanced capabilities, allowing the U.S. armed forces to maintain critical strategic advantages and keep the enemy guessing.

For more than two centuries, the armed forces have continually redefined how wars are won. Unique missions and requirements have driven demand for innovative products year after year, conflict after conflict, as traditional battle tactics have become obsolete. Original equipment manufacturers are prepared to meet the future needs of our customers, filling capability gaps and making their visions a reality.

Today, in an era of constantly emerging threats and evolving technologies, it's important for industry and the military services to work together to improve the acquisition system so that we can deliver cutting-edge products to the warfighter in a timely manner. Under the direction of the congressional armed services committees, as well as DOD, we have made real strides toward new approaches to acquisition. However, we still have more work to do to increase the speed at which we get the latest technological advancements into the hands of our military.

We are encouraged that our government partners have asked industry to help define reform initiatives that will yield the type of sustained, positive and long-term changes to the acquisition process that will produce enduring benefits, cost savings and a more efficient workforce. Like the idea of acquisition reform, these changes are not entirely new. They entail both restoring

LOOKING AT TOMORROW

Bell displays its "cockpit of the future" in fall 2015 at an Association of the United States Army trade show in Atlanta. Technology and innovation often move faster than the current acquisition system can support, Bell's Snyder noted, and a stronger commitment to industry-government collaboration is one way to get the final product into the hands of the end user more rapidly.

acquisition management practices that worked in the past as well as introducing more agile and adaptive methods that will help streamline and simplify the process.

EMPOWERED DECISION-MAKING

From a general perspective, the defense acquisition system can very often be time-consuming, resource-intensive and bureaucratic. We believe that there are a number of ways to realize efficiencies and save time and the associated costs.

First, empowering the individuals closest to the work—on both the industry and government sides—and thereby engaging the entire team will allow us to develop more collaborative and innovative programs that can be implemented more efficiently. These core values apply to our partnerships, our programs and, in spirit, the acquisition process at large.

Secondly, we need to empower our best professionals and incentivize program managers to not only procure the most cost-effective solutions but also to deliver critical capabilities and requirements quickly to the warfighter. We must look at programs from a holistic perspective and understand the total cost of a solution, including integration costs, training, maintenance, etc.—not just price at face value. Doing so will allow us to improve our agency review processes and evaluation cycles to be more in tune with urgent requirements and customer needs.

Finally, end-state equipment and its components should be separated in a manner such that the military can update design components easily with the introduction of new technologies, without having to go through a multiyear, multiagency review of system upgrades or capability increases. This will greatly assist in getting advanced functionality to the services without waiting the 10-plus years it often takes to introduce a new product, and will help integrate new technologies more efficiently into existing fleets at half the cost and in half the time.

A few decades ago, the contracting process was different, and easier. Government and industry negotiators sat together and worked collaboratively to develop contracts that sought to meet both parties' expectations. This type of open, robust dialogue and discussion ensured that all parties fully understood the requirements and left little to chance. It helped streamline deliverables and eliminated "scope (or requirements) creep." Today, as we work together to find ways to make the acquisition process less complicated, it would serve us well—the warfighter, the nation and the taxpayer—to go back to this approach.

A COLLABORATIVE PHILOSOPHY

Industry and government partners are working hard to learn from one another, as we strive to create new processes from the ground up while continuing to increase transparency and agility within all of our respective organizations.

At the industry level, we recognize it takes time to conduct preliminary design concept studies, analyses of alternatives, requests for information, requests for proposals and other steps of the competitive process ultimately leading to production. While all of these are important elements of the overall acquisition process, they all consume time, which is a critical commodity. In our experience, the vast majority of program schedule lags between industry and the government result from lack of data sharing and waiting for responses to inquiries.

FASTER, BETTER

The Bell V-280s here will have more than twice the speed and range of current helicopter platforms. Speed is also important in the acquisition process, and Bell advocates incentivizing program managers to improve the time it takes to get critical capabilities and requirements to the warfighter.

Together we can speed up product introductions by embracing a philosophy of collaborative teaming between government and industry. Working side by side in a joint environment that includes industry as a partner in government concept planning (design, build, test, train, maintain and upgrade), we can establish more realistic schedules and ensure that programs are subject to fair and open competition.

Our experience working on the Joint Multi-Role Technology Demonstrator (JMR-TD) has proven to be an excellent example of acquisition transformation, a model of this teaming philosophy. Through the JMR-TD, industry and the government are partnering throughout the early design and development phases and will continue to work in close cooperation until product delivery. Those of us on the industry side have been able to participate from the outset at levels that are not typical for this phase of a design competition. The result is bound to be an improved capability for the end user.

Using advanced tools, Bell Helicopter's Team Valor has been successful in creating a digital framework that connects all aspects of the program, including engineering, manufacturing and testing. We now have one common data source that facilitates a one-stop process for all change reviews between industry and government. All training systems, integrated logistics support products and much more can benefit from a common information source shared by government and industry. This proactive collaboration at the early phases of development allows us to understand the value of particular requirements and deliverables, and to tailor special requirements based on the results.

We look forward to learning more from the JMR-TD efforts and accomplishments, and to continue creating opportunities to use this new collaborative approach between government and industry, leading to shorter decision-making processes and moving programs forward faster.

STRAIGHT WING, TILT ROTOR

A wing is lowered onto the fuselage of a Bell V-280 Valor at the Bell facility in Amarillo, Texas. The V-280 is a third-generation, tilt-rotor concept being developed by Bell Helicopter and Lockheed Martin Corp. for the Army's Future Vertical Lift program. The team developed a digital framework that facilitates a one-stop process for all change reviews between industry and government.

CONCLUSION

Building on existing technologies, industry partners have significantly reduced the time it takes to bring new platforms to market while vastly improving the quantity, quality and reliability of the data produced during development. In many cases, technology and innovation are moving faster than the current acquisition system can support. And while all parties—government, the services and industry—may have agreed to pursue a new technology, it frequently takes too long to get the final product into the hands of the end user.

As we look to the future, our forces must be more agile and deployed at greater speeds—with more impressive technology and power than ever. The military is looking for unique capabilities, and we view it as our responsibility to equip the warfighter today with the tools of tomorrow.

Working together, we can build smarter, faster and more economically—and we have the data to prove it.

MR. MITCH SNYDER is president and CEO of Bell Helicopter, which he joined in 2004. Previously Bell Helicopter's executive vice president for military business, he has led a number of the company's key strategic initiatives, including the V-22 Osprey program. He has more than 30 years' experience in the aerospace and defense industry, including several leadership positions with Lockheed Martin Corp. He holds a B.S. in electrical engineering from Kansas State University, where he is an Alumni Fellow for the College of Engineering. He has also completed the Defense Institute for Security Assistance Management Executive Course.

TEAM SAN DIEGO
The product manager for waveforms team at San Diego. From left, back row: Ashley Covey, Al Pleskus, Rob Law, Anthony Dones and Farabi Hasan. Front row: Stephanie Toms, Teresa Caruso, Bryan Kimura and Dr. Rich North. (Photos by Barbara Schirloff, Janus Research Group)

TEAM ABERDEEN
The product manager for waveforms team at APG. From left, back row: Kathy Klinar, Lt. Col. Timothy Sugars, Adrian Brathwaite, Shawn Mathews, John Nash, Shane Snyder and Greg Avato. Front row: Julia Ruhnke, Eric Reinbold, Alicia Koeiman, Herald Beljour, Rob Law, Mercedes Johnson, Chad Bowker and Shannan Sweigart.

FACES OF THE FORCE:
PRODUCT MANAGER WAVEFORMS

Bicoastal team provides key waveforms for radios

by Ms. Argie Sarantinos-Perrin

When a Soldier needs to communicate, he picks up his radio and starts talking. He doesn't think about how his radio works. When Soldiers rely on their radios to talk, send texts and share data, it is the networking waveforms that connect the radio "box" and enable the radio to function and perform different tasks. For instance, some waveforms provide network connectivity between Soldiers on the ground and in the air, and other waveforms provide connectivity between Soldiers who are spread across large distances or in mountainous areas.

The product manager (PM) for waveforms team, which comprises a staff in San Diego and a group at Aberdeen Proving Ground (APG), Maryland, is responsible for sustaining, testing and improving the Soldier Radio Waveform (SRW), Wideband Networking Waveform (WNW), Single Channel Ground and Airborne Radio System Crypto Modernization and Enterprise Over the Air Management. The team overcomes the challenge of not being able to meet face-to-face with weekly call-in staff meetings, which keep everyone updated on key issues and major projects.

"While the waveforms team is located on different coasts, we work as a unified group, to not only continuously improve existing waveforms, but also develop cutting-edge waveforms that will extend radio communications even further," said Lt. Col. Timothy Sugars, product manager for waveforms. Following are five profiles of a cross-section of the team, reflecting a shared commitment to the Soldier across a variety of professional backgrounds.

LT. COL. TIMOTHY SUGARS

TITLE: Product manager for waveforms, assigned to the project manager for tactical radios, Program Executive Office for Command, Control and Communications – Tactical (PEO C3T)

YEARS OF SERVICE IN WORKFORCE: 9

YEARS OF MILITARY SERVICE: 18

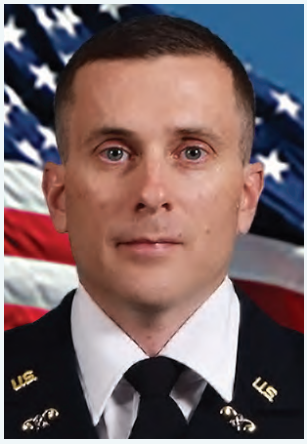
DAWIA CERTIFICATIONS: Level III in program management; Level I in test and evaluation

EDUCATION: M.S. in management from Austin Peay State University; B.S. in criminal justice from Alabama State University

BRIEFLY DESCRIBE WHAT YOU DO.
The product manager (PM) for waveforms is responsible for common waveform software development for Joint Tactical Network radios supporting the current and future force. This entails overseeing the development and sustainment of cost, schedule, performance and life cycle of the waveforms. These waveforms, which are provided to joint services, enable radios to transmit, receive and route voice, data and video between unmanned air and ground vehicles and combat platforms.

WHAT IS THE MOST REWARDING PART OF YOUR JOB?
Key to my job is ensuring that each employee and Soldier is equipped with the necessary resources he or she needs to successfully accomplish the mission. The challenge that I am dealing with at this point, being so new, is that I am working on learning and understanding waveforms in general and all the efforts we are working toward maintaining, sustaining and improving software to support the project manager for tactical radios (PM TR) and the program executive office.

MAJ. (P) DANIEL BRETT BATEMAN



TITLE: Assistant product manager for waveforms

YEARS OF SERVICE IN WORKFORCE: 4

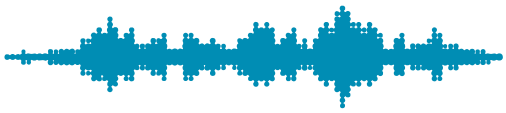
YEARS OF MILITARY SERVICE: 16

DAWIA CERTIFICATIONS: Level II in program management

EDUCATION: M.E. in engineering management and mechanics, University of Colorado Colorado Springs; B.S. in mechanical engineering, Northern Arizona University

BRIEFLY DESCRIBE WHAT YOU DO.
I supervise a multifunctional software development and program management team comprising 40 people that ensures that the Wideband Networking Waveform and science and technology efforts are delivered on time and on budget.

WHAT IS THE MOST REWARDING PART OF YOUR JOB?
I work on removing or reducing barriers so that my team is successful. Some of the most prevalent barriers are insufficient resources, conflicting and ambiguous roles among stakeholders and lack of communication about what the program is chartered to deliver. I attack those barriers by providing performance standards, prioritizing tasks, securing sufficient resources and fighting opposing agendas that get in the way of making Soldiers more lethal and survivable.



"While the waveforms team is located on different coasts, we work as a unified group, to not only continuously improve existing waveforms, but also develop cutting-edge waveforms that will extend radio communications even further."

Comprising 25 civilians, military personnel and contractors, PM Waveforms oversees the development and sustainment of cost, schedule, performance and life cycle of the waveforms.

A robust configuration management (CM) process ensures integrity over the life cycle of the waveforms. The CM process implements programs, procedures, techniques and tools to manage proposed changes, track program status and maintain system and support documentation as the waveforms evolve.

"Having a structured configuration management environment with clearly defined processes promotes accountability at every level," said Stephanie Toms, configuration and risk management, policy and process senior project analyst, "but most importantly, it enables us to deliver dependable, state-of-the-art waveform products that Soldiers can count on."

The PM Waveforms team also develops new waveforms, including two new ones that the team is currently working on: the Soldier Radio Waveform (SRW) Narrowband, which will have a small bandwidth but a greater range; and the Wideband Networking Waveform (WNW) Dynamic Spectrum Analysis, an on-the-move tool that will automatically transfer waveforms to unused frequencies.

Housed within the Program Executive Office for Command, Control and Communications – Tactical (PEO C3T), PM Waveforms is a relatively new team, formed in 2015 after the Project Management Office for Joint Tactical Networks was divided into two parts. While the waveform portion became PM Waveforms, the Joint Enterprise Network Manager was assigned to the Warfighter Information Network – Tactical (WIN-T), the tactical network backbone.

Now that more radio vendors can successfully load government-owned waveforms onto their platforms, the Army has implemented a radio marketplace acquisition approach that aims to lower costs and deliver radios more quickly using non-developmental item (NDI) products. The NDI strategy, which opens competition to industry, will ensure interoperability between different vendor systems and alleviates the need for vendors to create their own waveforms.

"One of my key responsibilities is ensuring the WNW is delivered on time and on budget," said Maj. (P) Daniel Bateman, assistant product manager for waveforms mid-tier. "I provide the scaffolding of what needs to be done, when and how, then let my staff decide how to deliver the product within that structure."

STORING, TESTING WAVEFORMS

The waveforms, which are available to government program offices and industry partners to port onto their platforms, are stored in the Waveform Information Repository (IR), maintained by the Joint Tactical Networking Center. By porting government-owned waveforms from the IR onto radios, vendors do not have to create their own, saving time, reducing cost and ensuring that all of the radios that use the common DOD-authorized waveforms are interoperable and secure.

With the common waveforms, improvements can be made without deploying new hardware to the field, which is important in enhancing network security and defending against

GREG AVATO

TITLE: Acquisition management specialist

YEARS OF SERVICE IN WORKFORCE: 5

DAWIA CERTIFICATIONS: Level II in contracting

EDUCATION: B.S. in business administration, Drexel University

BRIEFLY DESCRIBE WHAT YOU DO.
I provide guidance, process documentation and track contract actions for the PM Waveforms team. I also manage the integrated product team for the Software In-Service Support follow-on contracts.

WHAT IS THE MOST REWARDING PART OF YOUR JOB?
The most rewarding part of my job is being part of the constantly evolving PM Waveforms team. We are expanding quickly while meeting waveforms requirements and supporting the various PM TR programs.

ERIC REINBOLD (Contractor, Booz Allen Hamilton Inc.)

TITLE: Networking communications engineer

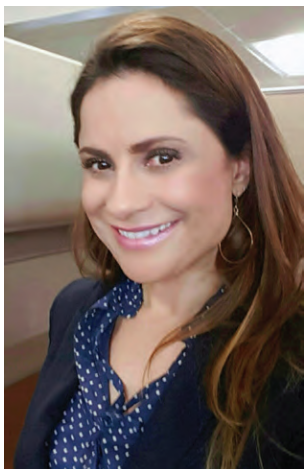
YEARS OF SERVICE IN WORKFORCE: 1

EDUCATION: M.E. in communications engineering and B.S. in electrical and computer engineering, Cornell University

BRIEFLY DESCRIBE WHAT YOU DO.
I provide technical program management of waveform capabilities in connection with stakeholder needs from PEO C3T and our sister product managers.

WHAT IS THE MOST REWARDING PART OF YOUR JOB?
The amount of hard work and coordination that goes into developing and maintaining tactical radio products has been eye-opening. There's a lot of information to digest, but I'm enjoying the challenge. The best part is seeing our waveform products, which provide critical capabilities to Soldiers, used in PM TR radios.

STEPHANIE TOMS (Contractor, CSRA Inc.)



TITLE: Senior project analyst, configuration and risk management, policy and process

YEARS OF SERVICE IN WORKFORCE: 7.5

CERTIFICATIONS: Lean Six Sigma Green Belt, American Graduate University Certificate of Completion in Program Management

EDUCATION: B.S. in business management from National University

BRIEFLY DESCRIBE WHAT YOU DO.
Configuration management (CM) involves ensuring a system's integrity over its life cycle. CM implements policies, procedures, techniques and tools to manage proposed changes, track the status and maintain system and support documentation as the system evolves. I also work with the risk manager to analyze risks, including how the risks will affect the product office.

WHAT IS THE MOST REWARDING PART OF YOUR JOB?
I really enjoy developing and establishing policy and processes in regard to CM. My early exposure and experiences working for DOD solidified my decision long ago to continue a career working for the men and women who sacrifice the unspeakable for our everyday freedoms.

increased cyber threats. Additionally, the waveforms can be used by other services, including the Air Force, Navy and Marine Corps.

Before the waveforms are added to the IR, they are tested at two reference information laboratories (RILs) that PM Waveforms oversees. The SRIL, or SRW lab, is at APG, and the WRIL, or WNW lab, is in Charleston, South Carolina. By working closely with the National Security Agency, PM Waveforms ensures that the waveforms are Type I and Type II information security certified.

PROVIDING THE LINK

The SRW and WNW waveforms are internet protocol (IP)-based, so they can interoperate with other IP-based networks. For example, the SRW and WNW provide a seamless network interface with existing DOD network infrastructures such as WIN-T.

Interoperability is also achieved through the software communications architecture (SCA), which provides the framework and parameters that enable the radios to load waveforms, run applications and successfully work as an integrated system. The SCA leads to greater innovation since vendors can make changes to a waveform and add them back to the IR so that other vendors can benefit from the changes. This not only fosters interoperability among radios, but also reduces the overall cost of ownership to the waveforms since any changes—including performance or security—are made only once in a single baseline.

PLANNING FOR THE FUTURE

PM Waveforms is currently working on follow-on contracts for the SRW and WNW, which are on the Software In-Service Support (SwISS) contract. By responding to requests for information and conducting market surveys and one-on-one meetings, PM Waveforms is gathering information that it will use to develop the request for proposals, which is planned for release in FY17.

"Coordinating the group efforts for the new SwISS contract is challenging, but we are coming together well to get the job done," said Greg Avato, acquisition management specialist. "Since the SwISS contract will be a multiple-award, indefinite delivery, indefinite quantity contract—a departure from the current single-award contracts—we are forced to make changes to how we evaluate, solicit and award our task orders. We are also reviewing the best way to account for the software data rights in a multiple award environment."

Contracts will be awarded to multiple vendors for both the SRW and WNW, and each task order will be competed. Based on current milestones, the Army plans to award contracts in FY18. In addition to increasing the number of qualified vendors, this approach will also allow for greater innovation.

MS. ARGIE SARANTINOS-PERRIN is a staff writer for DSA Inc., providing contract support to the project manager for tactical radios within PEO C3T. She holds an M.S. in professional writing and a B.A. in mass communications from Towson University, and has 11 years of public affairs experience supporting DOD.

"Having a structured configuration management environment with clearly defined processes promotes accountability at every level … but most importantly, it enables us to deliver dependable, state-of-the-art waveform products that Soldiers can count on."

FROM THE DIRECTOR,
U.S. ARMY ACQUISITION SUPPORT CENTER

INVESTING *in* PEOPLE

Craig A. Spisak
Director, U.S. Army Acquisition Support Center

By valuing individual and group potential, the Human Capital Strategic Plan points the way to success for the Army Acquisition Workforce

Human capital, talent, human resources, personnel, staff—these are all names that we use to describe the workforce inside an organization. But what's in a name? It's not so much the terminology but rather the evolving mindset behind the organization's operations that count. That mindset must take a more holistic view of the workforce, individually and collectively. It must consider their knowledge, talent, skills, abilities, experience, intelligence, training, judgment and wisdom.

When people are valued and treated as assets rather than expenses, and teams do everything possible to develop employees to their maximum potential and contribution, then the language used to describe the process is not so important. But it takes more than just changing what you call the workforce to achieve success; it takes a plan—a well-conceived, inclusive, innovative, detailed, continuous plan to recruit, maintain, develop and retain world-class professionals. In this case, I'm referring to the Army Acquisition Workforce (AAW).

CONTINUOUS PROCESS

A major part of the U.S. Army Acquisition Support Center (USAASC) is the Army Director for Acquisition Career Management (DACM) Office. We have the tremendous responsibility of providing everything acquisition career-related for approximately 37,000 Army acquisition civilian and military leaders and professionals located worldwide in Army staff offices, Army commands, Army service component commands, program executive offices and direct reporting units.

We collaborate with the Defense Acquisition University, the undersecretary of defense for acquisition, technology and logistics (USD(AT&L)) and the USD(AT&L) Human Capital Initiatives Office to enable acquisition workforce initiatives and to serve as advocates for the AAW. We are constantly evaluating, monitoring, researching, innovating and fine-tuning the policies and procedures that help us train, educate and cultivate the AAW. To continue to do our job well, we must further our efforts and commitment by developing, updating and implementing the five-year AAW Human Capital Strategic Plan (HCSP).

A HOLISTIC LOOK AHEAD
The HCSP helps to develop and equip acquisition professionals with the skills, training and experiences to be successful in their jobs and, ultimately, in the acquisition mission. It drives how strategic initiatives are shaped to realize that focus, while engaging workforce stakeholders. (Image courtesy of the Army DACM Office)

The HCSP is USAASC's systematic and collaborative process for anticipating workforce capability gaps and providing solutions to recruit, develop, maintain and retain a highly skilled, engaged AAW of program managers, scientists, engineers, information technologists, contracting specialists and other acquisition professionals who are experienced, high-performing and committed to providing world-class capabilities to our Soldiers. In short, this is our piece of supporting Army readiness. As a community, we must remain ready to provide the equipment and services Soldiers need to win across multiple missions, conditions and geographies.

Grounded in the Army values—loyalty, duty, respect, selfless service, honor, integrity and personal courage—as its guiding principles, this plan fosters a collaborative decision-making process based on trust, transparency, accountability, deliberation and ethics. The plan is a reflection of our commitment to the workforce to develop the next generation of leaders and advance the Army acquisition profession.

The HCSP has five goals: communication and collaboration, workforce shaping, employee engagement, professional development and leadership development. The goals are the result of a collaborative process that brought together representatives from across Army Acquisition Workforce organizations, stakeholders and members.

IT TAKES A COMMUNITY

Lt. Gen. Michael E. Williamson, principal military deputy to the assistant secretary of the Army for acquisition, logistics and technology and the Army DACM, wants implementation of the HCSP to involve everyone, from acquisition senior leaders to the individual AAW member. That voice of the people comes mostly from his Acquisition Workforce Advisory Board, a consortium of acquisition professionals at all levels and organizations brought together to support candid discussions and honest feedback on acquisition-specific career development challenges for the Army DACM.

A key to the success of this strategic planning effort will be formalized governance via steering committees, councils, and specific integration and project teams.

CONCLUSION

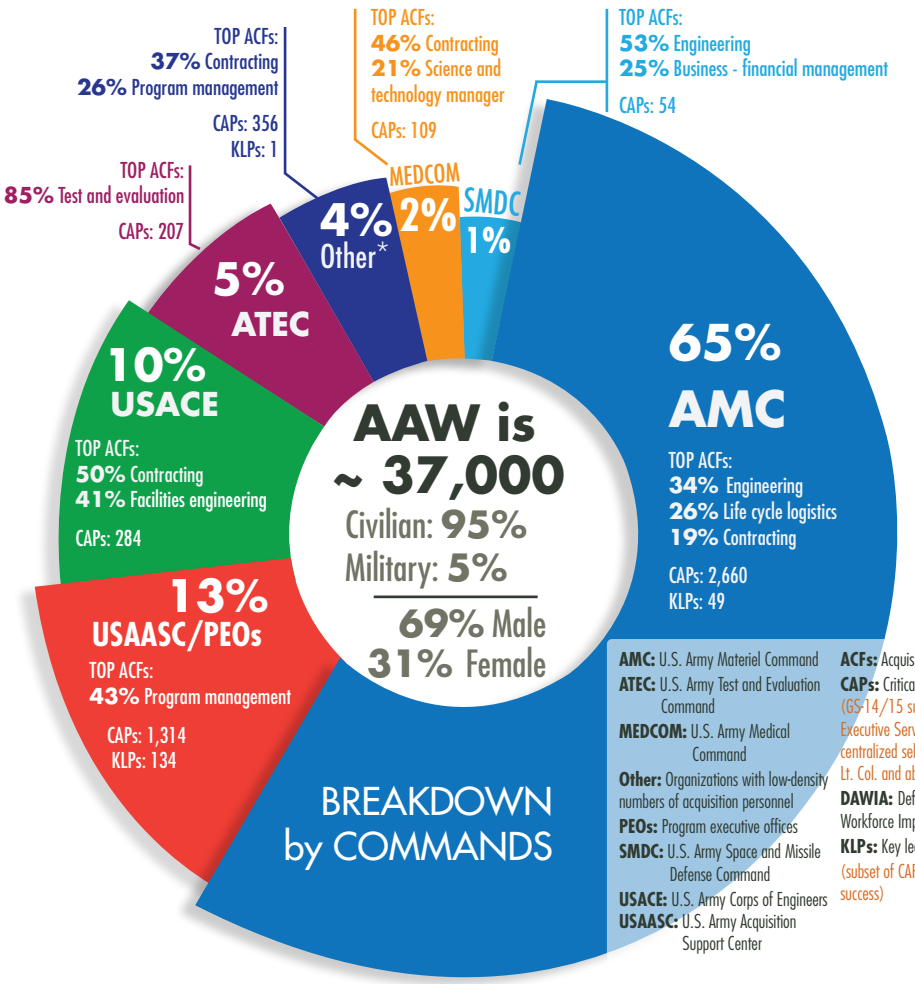
As the HCSP unfolds, we will continue to refine the goals and objectives, and draft initiatives and metrics to measure our progress and success. Using this as our guide, we will prioritize our resources, focus our efforts each year and track our progress.

To keep the plan current and relevant, we will conduct periodic reviews and will need continuous input from our acquisition professionals, managers and leaders throughout the Army. I invite you to join us in our progressive quest of putting people first by submitting suggestions, comments or questions to ***usaarmy.belvoir.usaasc.mbx.usaaasc-aaw-hcsp@mail.mil,*** or go to ***http://asc.army.mil/hcsp/***.

For a closer look at the goals and some of the initiatives on the horizon, read "A Ready Acquisition Workforce," Page 165.

WHAT IS THE AAW?

As a member of the Army Acquisition Workforce, you can make a fairly rare claim: There's an entire office specifically dedicated to managing your career. The Army DACM Office supports approximately 37,000 military and civilian acquisition professionals across a dozen commands and 14 acquisition career fields, and is rolling out a new initiative, the HCSP. The infographic below provides information about how the AAW spends its days: where its members work, what they specialize in and what kind of training they have.

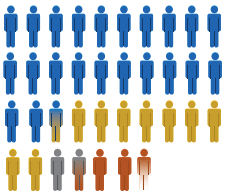


AMC: U.S. Army Materiel Command
ATEC: U.S. Army Test and Evaluation Command
MEDCOM: U.S. Army Medical Command
Other: Organizations with low-density numbers of acquisition personnel
PEOs: Program executive offices
SMDC: U.S. Army Space and Missile Defense Command
USACE: U.S. Army Corps of Engineers
USAASC: U.S. Army Acquisition Support Center

ACFs: Acquisition career fields
CAPs: Critical acquisition positions (GS-14/15 supervisory; Senior Executive Service; general officers; centralized selection list; all military Lt. Col. and above)
DAWIA: Defense Acquisition Workforce Improvement Act
KLPs: Key leadership positions (subset of CAPs, ensures program success)

HIGHLY QUALIFIED PROFESSIONALS

DAWIA CERTIFICATION



61% DAWIA Level III certified
24% DAWIA Level II certified
5% DAWIA Level I certified
10% No DAWIA certification

99% of the AAW are certified or within the grace period.

EDUCATION

15,877 Professionals with a postgraduate degree

2% DOCTORATE
40% MASTER'S
44% BACHELOR'S
14% HIGH SCHOOL & ASSOCIATE

AGE:

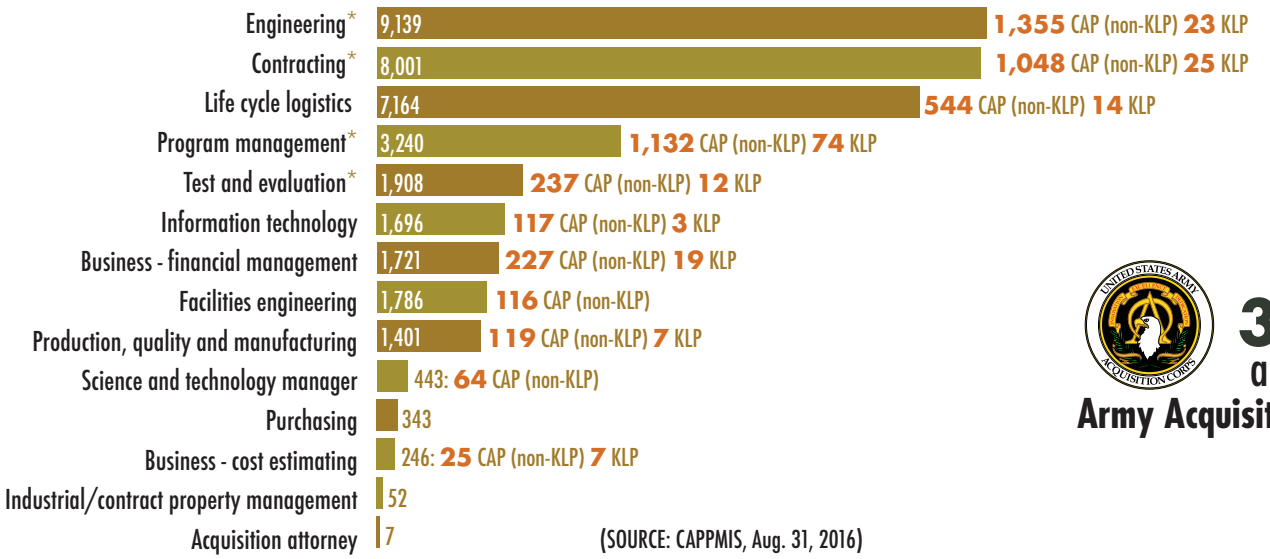
47 years is the average age

SERVICE:

16 average years of service in the workforce

17% Eligible for optional retirement

ACQUISITION CAREER FIELDS — AAW MEMBERS PER ACF



*Includes civilian and military personnel.

(SOURCE: CAPPMIS, Aug. 31, 2016)

34% are **Army Acquisition Corps** members

CAREER CORNER

A READY ACQUISITION WORKFORCE

The Human Capital Strategic Plan: What does it mean for you?

by Ms. Joan L. Sable

Shaped by two important factors—the Army priority of readiness and the Army acquisition executive's philosophy of people, policy and processes—the U.S. Army Director for Acquisition Career Management (DACM) Office has spent the past several months building the Human Capital Strategic Plan (HCSP), formalizing processes to sustain an Army Acquisition Workforce (AAW) that can provide our Soldiers with world-class equipment and services, now and in the future.

The HCSP emphasizes people as the enablers for the competencies, commitment and values that position the AAW to best contribute to mission readiness. It is this strategic focus on each member of the workforce and everything each one brings to the table that enables us to serve the Soldier at the highest level, sustain our investment in a dedicated, world-class acquisition workforce, and continue to recruit, develop and grow our talent.

Are you a member of the Army Acquisition Workforce (AAW)? If you are, did you know there is an Army office specifically dedicated to you and your acquisition career? The Army DACM Office is here to support the 37,000 military and civilian acquisition professionals from across more than 12 commands and within 14 acquisition career fields.

This plan provides a framework to ensure that the Army DACM Office is aligned to provide the AAW with acquisition career information and leader development opportunities. So, why now? In a word: readiness.

FIGURE 1

PLANNING PROGRESS
The HCSP's five main goals align human capital strategies with the ASA(ALT) mission and represent critical challenges facing the AAW. Shaped by the Army priority of readiness and a philosophy of people, policy and processes, the plan emphasizes people as the enablers for the competencies, commitment and values that position the AAW to best contribute to mission readiness. (SOURCE: Army DACM Office)

FACING THE CHALLENGES

The Army DACM Office is responsible for everything related to acquisition statutory requirements and professional development programs for a talented, educated and diverse workforce including military and civilian acquisition professionals—the engineers, contracting experts, life cycle logisticians, program managers, scientists, information technology specialists and more. That's no small feat, especially considering the challenges we're facing.

Since 2014, the Army has experienced a 38 percent increase in global security issues, while the acquisition workforce has experienced an 18 percent reduction in overall personnel—from 43,473 in 2007. Twenty percent of the AAW is eligible to retire, and that figure will rise to 57 percent in the next 10 years. Our leaders from across the Army acquisition community are aware of these changes and recognize the unique challenges they pose along with the evolving security environment, including the impact on Army readiness.

GETTING HERE

The Human Capital Strategic Plan is a team initiative. It was developed over the past year by leaders from across the AAW representing multiple commands, organizations, experience levels and skill sets. The Army DACM Office conducted an environmental scan focused on workforce demographics, interviewed

senior leaders, and hosted three workshops to understand the strengths, weaknesses, opportunities and threats relative to the AAW. Participants from commands and organizations from across the acquisition community provided feedback on your unique needs and represented your interests.

As a result, five main goals emerged to align human capital strategies to the mission of the assistant secretary of the Army for acquisition, logistics and technology (ASA(ALT)), representing the most critical human capital challenges we face.

But what's a goal without objectives, milestones and measures?

All of those are captured in an implementation plan—a 65-page working document that outlines key initiatives, owners from across the community, milestones and measures of effectiveness over the next five years. (See Figure 1.) Not everything is new: Some of the initiatives are ongoing but needed adjusting to meet the intent of the plan. And while the official launch of the plan is in October, some of the new initiatives won't begin right away. This is an enduring, collaborative effort—one that's critical to develop the next generation of leaders and advance the Army acquisition profession.

THE NUTS AND BOLTS

Goal One addresses workforce planning. How do we know we have the right human capital to face growing global security challenges and threats, and to leverage emerging technological innovations? Which Army positions should be acquisition positions? How do we recruit the best acquisition workforce talent for the future? This goal brings together a workforce planning process that will develop our collaborative, common view of the future acquisition workforce, informed by all of the commands, organizations and agencies that we partner with.

Some of the key initiatives include developing position guides so that requiring and hiring agencies can determine if a position is in acquisition; reducing the time it takes to fill vacancies, particularly in critical skill positions; collecting requirements to implement an integrated data management system across the Army acquisition community; developing a workforce planning and governance process outlining purpose, established roles and responsibilities, goals and objectives aligned under an integrated, enterprise-level workforce management framework; and increasing the use of flexible hiring authorities to fill acquisition positions efficiently.

Twenty percent of the AAW is eligible to retire, and that figure will rise to 57 percent in the next 10 years.

Goal Two focuses on professional development. The AAW is governed by the Defense Acquisition Workforce Improvement Act (DAWIA), which governs acquisition career development and certification, and ensures relevancy through continuous learning points. DAWIA certification includes three tenets: Defense Acquisition University training; education; and experience. This goal focuses on each of these tenets with a specific emphasis on acquisition experience and innovative initiatives geared toward attaining it.

Some of the key initiatives include leveraging enterprisewide training and education opportunities supported by the Defense Acquisition Workforce Development Fund to maximize employee professional growth opportunities; expanding the use of the Individual Development Plan to identify potential training, learning and mentorship opportunities; updating career development models for all acquisition career fields (ACFs); and conducting ACF functional and leadership competency assessments to enhance employee-supervisor discussions of career development opportunities and gaps.

Goal Three specifically addresses leader development. How do we better identify those AAW members who have the greatest leader potential and further develop those who need it? Lt. Gen. Michael E. Williamson, the Army DACM, instituted the Senior Rater Potential Evaluation policy as a tool modeled after the new Officer Evaluation Record to assess the leadership potential of our GS-12 through GS-15 acquisition professionals.

This tool has proven significant during the review board selection process for key positions and professional development

opportunities. Once an acquisition professional emerges as having leadership potential, it's critical to ensure that his or her leadership skills continue to develop through the many training, education and experience programs offered by the Army DACM Office. This goal also focuses on developing a leadership culture that embraces talent management and employee feedback.

Some of the key initiatives outlined in this goal include expanding central boards to key leader positions; ensuring the active promotion of enterprise talent management programs for all levels and encouragement for potential AAW leaders to apply; promoting and encouraging active participation in the Army's Civilian Education System; and increasing participation in professional development programs offered by the Army DACM Office.

Goal Four provides special emphasis on employee engagement. Essentially, this goal will improve AAW engagement as a core business practice. We learned, through our initial analysis of strengths, weaknesses, opportunities and threats, that many AAW members and potentially their supervisors might not understand they are part of this workforce. They might be going through the motions regarding their acquisition certification requirements without understanding that they are part of something bigger than themselves or their commands. This goal outlines objectives focused on improving acquisition employee-supervisor relationships.

Key initiatives include developing uniform onboarding guidance for the AAW community; increasing awareness and emphasis regarding supervisor training so that AAW members are well-prepared for supervisory positions; promoting quality-of-life programs; and increasing use of employee incentives to ensure that AAW members feel valued, appreciated and appropriately recognized.

Goal Five stresses the need for an effective communication and collaboration process. Because the AAW is a diverse workforce both geographically and across commands, it is important to ensure that acquisition and non-acquisition leaders and professionals understand the mission and are aware of the DAWIA mandate on acquisition professionals. This goal focuses on bringing the community together through a governance process involving representatives from across this diverse group. It also focuses on effectively communicating and synchronizing AAW initiatives while building enduring relationships with our customers, partners and stakeholders.

Some of the key initiatives include conducting professional development visits at key commands and agencies; developing a governance process to validate, prioritize and integrate human capital programs; and promoting the Army acquisition community as a way to share best practices and achievements.

CONCLUSION

The HCSP supports the Army's readiness priorities and the Army acquisition executive's philosophy focused on people, policy and processes. It institutionalizes an enduring process to sustain this high-quality workforce charged with a unique and critical mission: to provide Soldiers with the equipment and services they need to win, no matter the mission, environment or location in the world. It's a commitment to and an investment in people to sustain the acquisition workforce we have today and build the one we need for tomorrow.

For more information and a copy of the plan, go to ***http://asc.army.mil/hcsp****. We welcome your feedback, thoughts and comments at* ***usarmy.belvoir.usaac.mbx.usaac-aaw-hcsp@mail.mil****.*

This is an enduring, collaborative effort—one that's critical to develop the next generation of leaders and advance the Army acquisition profession.

MS. JOAN L. SABLE is chief of the Human Capital Initiatives Division in the Army DACM Office. She holds an MBA from Strayer University and a B.S. in education from Longwood University, and has worked in the Army acquisition community for more than 17 years. She is Level III certified in program management and a member of the Army Acquisition Corps.

US ARMY PEO EIS
PEO Enterprise Information Systems

U.S.ARMY

EMPOWERING INFORMATION DOMINANCE

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SUCCESS
GROWTH
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C4ISRNET
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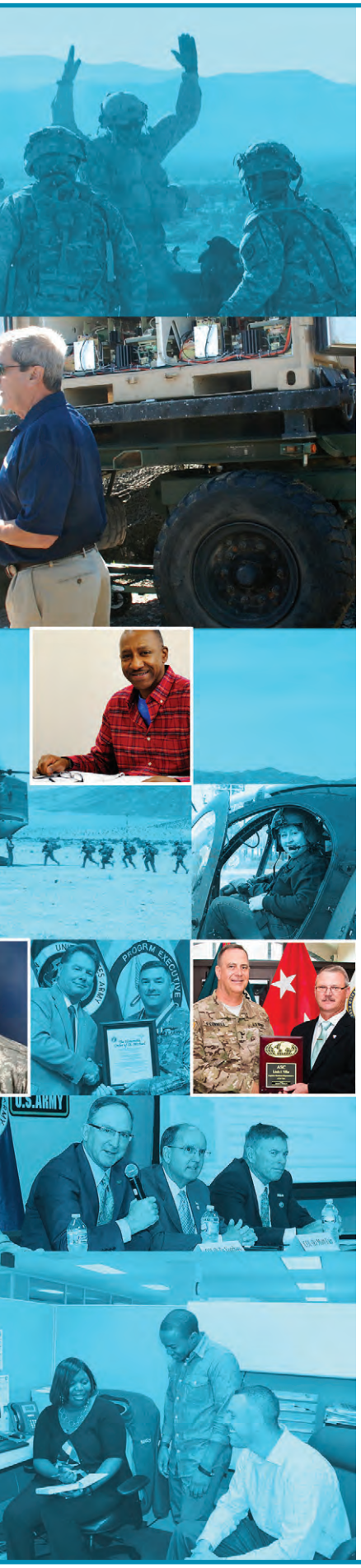


REFORMING MOTIVATION

Army acquisition reform starts with inspiring the workforce. A deep dive into a handful of surveys sheds light on how to do that.

by Mr. Nicholaus Saacks

As dialogue intensifies around the best ways to reform the acquisition system, many proposals will offer new processes and realigned responsibilities to improve efficiency and effectiveness. However, no matter what changes may come, the Army acquisition system will continue to be reliant upon and driven by people. The system can only be successful through the performance, commitment and motivation of the acquisition workforce. With so much at stake, how can leaders be certain they are using the motivators that match the preferences of their employees? To improve Army acquisition, we must start by increasing our effectiveness in motivating the Army Acquisition Workforce (AAW).

The 2015 Federal Employee Viewpoint Survey (FEVS) can be used to evaluate the extent to which AAW employees are motivated today. Results of the Army FEVS can

BUILDING THE FUTURE

Army acquisition will always be reliant on its most important resource: its people. And as DOD and the Army navigate possible reforms, senior leadership can find increased effectiveness and efficiencies in improving the ways they motivate and reward the people around them. (Image courtesy of the U.S. Army Acquisition Support Center)

FIGURE 1

ARMY ACQUISITION WORKFORCE MOTIVATOR	FEDERAL EMPLOYEE POSITIVE RESPONSES	OVER 40 YEARS OF RESEARCH RANKINGS	2012 MERIT SYSTEMS PROTECTION BOARD STUDY: IMPORTANT OR VERY IMPORTANT
Appreciation	38%	1	83.9%
Awards	41%	1	78.3%
Feelings on Things	64%	5	82.1%
Good Wages	58%	4	Not rated
Interesting Work	66%	2	93.6%
Organization's Mission	86%	Not rated	87.3%
Personal/Company Loyalty	72%	7	61.2%
Promotion/Growth	49%	6	80.9%

GOLD STARS AND RED FLAGS

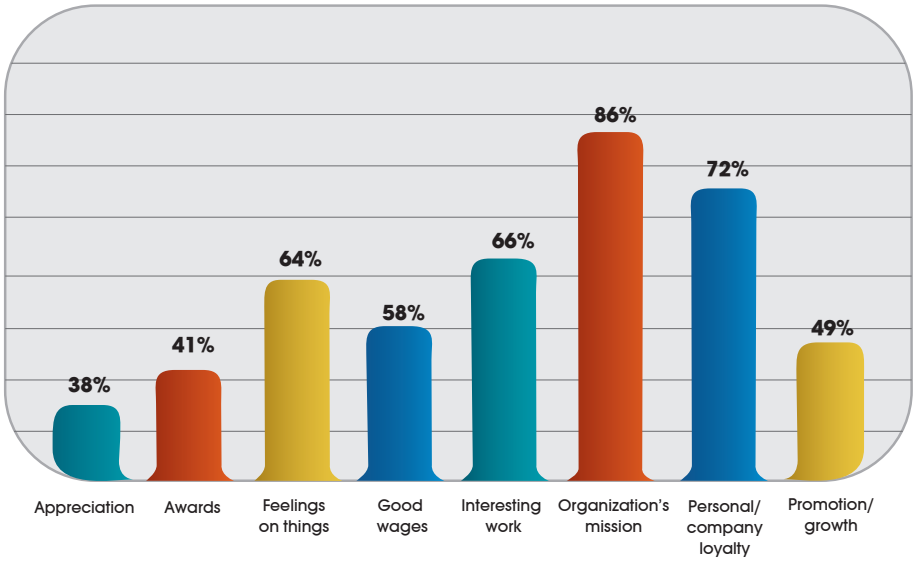
Army responses to the 2015 FEVS indicate that employees see the importance of the work that they do and feel connected to their organization's mission. However, low scores in the categories of appreciation and awards highlight the need for leadership to take a closer look at how it recognizes employees' efforts. (SOURCE: Nicholaus Saacks)

Leaders must take action to make the workforce feel more appreciated. Appreciation can be administered easily and is inexpensive.

be categorized and matched to popular motivators. When doing so, the data show that AAW employees certainly see the importance of their jobs and the connection to their organization's mission. (See Figure 1.) Respondents are generally satisfied with their performance evaluation and performance feedback, enjoy and understand their jobs, and feel that their supervisors encourage individual development and allow a healthy work-life balance. All of these results positively impact employee motivation.

However, other results of the FEVS show cause for concern. Army respondents do not feel appreciated for their contributions, are not satisfied with pay raises, and do not feel empowered or motivated. Additionally, they feel awards are neither meaningful nor decided in accordance with merit principles. These results are likely to have a negative impact on employee motivation. Based on these factors, it is not surprising that only 42 percent of the workforce reports that senior leaders generate high levels of motivation. Analyzing the survey results

FIGURE 2



FINDING THE RIGHT MOTIVATOR

Cross-referencing FEVS categories to studies ranking the importance of those categories indicates that the areas where Army employees ranked their leadership less favorably are the ones they find most critical to their workplace motivation. To better motivate the workforce, the author suggests, leadership should take steps to address those deficits. (SOURCE: Nicholaus Saacks)

against popular motivators throughout research literature sheds light on the driving force for this level of satisfaction.

There is a large range in these scores. Three motivators—appreciation, awards and potential for promotion and growth—fell below 50 percent positive responses. (See Figure 2.) Alternately, both the organization's mission and loyalty exceeded 70 percent positive responses. Knowing the importance or priority of these motivators would put these scores in a more useful light. To achieve this, compare the FEVS results to two research sources: Carolyn Wiley's 1997 study on the top employee motivators over 40 years of research and the 2012 U.S. Merit Systems Protection Board (MSPB) Federal Employee Engagement study.

The juxtaposition of AAW motivators, FEVS results, literature review and the MSPB report provides a number of insights. First, appreciation is both the lowest-scoring motivator on the FEVS and among the most important motivators, according to both Wiley's study and the MSPB study. Awards show a similar pattern, although the difference between their perceived importance in Wiley's study and in the MSPB report indicates that they may be more important to the general employment population than the federal workforce. Third, interesting work appears to be a high motivator across all three studies, and it is encouraging that the AAW is generally positive in its current view toward that motivator. Finally, the opportunity for promotion and growth is a somewhat mediocre motivator across both the Wiley study and the MSPB study. So, while there is much room for improvement in this area, higher priority may be given to other, more preferred motivators.

So how can Army acquisition leaders raise the percentage of employees who see senior leaders generating high levels of motivation in the workforce? Before changing anything, leaders should keep doing what is working. According to the FEVS, employees are generally satisfied with their feelings of inclusion, wages, connection to the mission and loyalty of the organization to the individual. In addition, employees are satisfied with the challenge of their work and the potential for promotion and growth. This is promising, especially since interesting work is one of the top employee motivators across all the research. Managers and senior leaders should keep reinforcing these perceptions. Ignoring these strengths to chase improvements in other areas would be foolish; leaders should preserve what they do well to ensure that motivation levels do not slip further. Still, supervisors and senior leaders could improve in two areas of motivation.

First, leaders must take action to make the workforce feel more appreciated. Appreciation can be administered easily and is inexpensive. It can be as easy as saying "thank you" for a job well done. Currently, less than half of employees feel adequately recognized for good work. Many supervisors and leaders are likely trying to show their employees appreciation, but in a manner inconsistent with the employees' preferences. Leaders should engage in dialogue with

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ON THE MOVE

COLE IS NEW PEO STRI; MADDUX RETIRES

Having just been presented the charter of the program executive officer for simulation, training and instrumentation (PEO STRI), **Brig. Gen. William E. Cole** told the audience he was "honored and incredibly humbled. PEO STRI is a fantastic organization, executing a critical mission for the Army during a challenging period for our country." The **Hon. Katrina McFarland**, assistant secretary of defense for acquisition performing the duties of the assistant secretary for the Army acquisition, logistics and technology and the Army acquisition executive, presided over the change of charter June 16 in Oviedo, Florida. Cole replaced **Maj. Gen. Jonathan A. Maddux**, who retired from the Army after 40 years of service.

McFarland had high praise for the outgoing and incoming PEOs. "Jon, you can be as proud of your people as they are of you," she said. "Together, you have done an incredible job strengthening the link and solidifying the trust between Soldiers and the training they require for mission success. Thank you for your dynamic and distinguished leadership of PEO STRI.

"Bill is an accomplished officer who is no stranger to the world of a program executive officer," McFarland said of Cole. "He has outstanding leadership skills that will enable him to continue PEO STRI's tradition of strong and effective leadership."

Vice Chief of Staff of the Army **Gen. Daniel B. Allyn** officiated at Maddux's retirement ceremony the same day. Allyn thanked Maddux and his wife, Liz, for their dedicated service to the Army and the country. "Today, we honor a family that has committed itself to a lifetime of service, always taking the toughest jobs, always leading from the front and always, by example," Allyn said.

"It has been an honor to work with the professionals at PEO STRI and other organizations these past two years," said Maddux. "We play a critical role in ensuring our great Soldiers are prepared to conduct and win in complex joint operations though a hybrid blend of simulated training."

Maddux enlisted in the Army in 1976 and served a three-year tour with the 82nd Airborne Division before earning two bachelor's degrees and receiving his commission as a second lieutenant. He later earned three master's degrees in addition to attending U.S. Army War College and Command and General Staff College. He held positions at the tactical, operational, joint and strategic levels during his career, including assignments as assistant to the principal military deputy of the ASA(ALT); deputy commanding general (CG) for support at the Combined Security Transition Command – Afghanistan; program executive officer for ammunition and CG, Picatinny Arsenal, New Jersey; and project manager for Future Combat Systems network systems integration.

His military awards and decorations include the Legion of Merit (with four Bronze Oak Leaf Clusters); the Bronze Star Medal; Meritorious Service Medal (with three Bronze Oak Leaf Clusters); Army Commendation Medal (with Silver Oak Leaf Cluster); Army Achievement Medal (with Bronze Oak Leaf Cluster); the Master Parachutist Badge; Air Assault Badge; and Ranger Tab. (U.S. Army photo)

NEW MEDICAL MODELING JOINT PMO

Col. Christopher Todd, center, received the charter for the new Joint Project Management Office for Medical Modeling and Simulation (JPMO MMS), flanked by **Maj. Gen. Jonathan A. Maddux**, then-PEO STRI, and **Robert Bolluyt**, deputy component acquisition executive of the Defense Health Agency (DHA), during a charter activation ceremony April 8 in Orlando, Florida.

Todd now serves as joint project lead for JPMO MMS, chartered by DHA and managed by PEO STRI. The assistant secretary of defense for health affairs created the office in September 2013 to fulfill the services' shared medical training requirements. JPMO MMS will provide DOD with a centralized, total life cycle management approach to the advanced materiel development and procurement of training aids, devices, simulators and simulations across the military health care system. (U.S. Army photo)

408TH CSB WELCOMES NEW COMMMANDER

Col. Michelle Sanner assumed command of the 408th Contracting Support Brigade (CSB) in a June 15 ceremony at Shaw Air Force Base, South Carolina, accepting the 408th's colors from **Brig. Gen. Michael D. Hoskin**, commanding general (CG) of U.S. Army Expeditionary Contracting Command (ECC), the 408th CSB's parent command. Relinquishing command of the brigade to Sanner was **Col. Phillip Smallwood**, right. Distinguished guests included **Lt. Gen. Michael X. Garrett**, U.S. Army Central commanding general, and **Brig. Gen. Robert A. Karmazin**, commander of the Army Reserve Engagement Cell at U.S. Army Central. Smallwood will spend a year at the U.S. Army War College in Carlisle Barracks, Pennsylvania, and is scheduled to take command of the 414th CSB in Vicenza, Italy. (Photo courtesy of U.S. Army Contracting Command)

CHANGE OF COMMAND AT 410TH CSB

Col. Joshua Burris, left, assumed command of the 410th CSB, accepting the brigade colors from **Brig. Gen. Michael D. Hoskin**, CG of the ECC, in a June 13 ceremony at Joint Base San Antonio – Fort Sam Houston, Texas. Burris succeeded **Col. Daryl P. "Rick" Harger**, right, as the leader of the 410th CSB.

Burris comes to the 410th CSB after serving as deputy chief of staff for the U.S. Army Mission and Installation Contracting Command as well as Army lead and executive director for the Operational Contract Support Joint Exercise 2016. Before that, he served as commander of the 905th Contracting Battalion in support of the U.S. Army Special Operations Command at Fort Bragg, North Carolina. (Photo courtesy of U.S. Army Contracting Command)

WAVEFORMS CHARTER CHANGES HANDS

Col. James Ross, left, project manager for tactical radios in the Program Executive Office for Command, Control and Communications – Tactical (PEO C3T), passed the charter of the product manager (PM) for waveforms to **Lt. Col. Timothy Sugars** during a ceremony June 28 at Aberdeen Proving Ground, Maryland. Outgoing PM **David Williamson**, who is retiring, received the Commander's Award for Civilian Service for his work on the program. (Photo by Denise Rule, PEO C3T)

NEW FSC2 PRODUCT LEAD

Julie Ruhnke, product lead for fire support command and control (FSC2), passed the organization's charter to **Lt. Col. Christopher Anderson** during a July 12 ceremony at Aberdeen Proving Ground. **Mary Woods**, left, deputy PEO C3T, hosted the ceremony. (Photo by Denise Rule, PEO C3T)

Col. Timothy Domke

NEW PM FOR TRAINING DEVICES

In a Sept. 1 ceremony in Orlando, Florida, **Col. Timothy Domke** assumed the charter of project manager for training devices (PM TRADE) from **Scott Pulford**, who had been the acting project manager since May. PM TRADE is assigned to the Program Executive Office for Simulation, Training and Instrumentation. Domke joined the Army Acquisition Workforce in 2003 and has served in numerous assignments, including assistant product manager for PEO C3T's Warfighter Information Network – Tactical; product manager for the Global Combat Support System – Army; military deputy for the Sensors and Electron Devices Directorate of the U.S. Army Research Laboratory; and the military acquisition assistant to the undersecretary of the Army.

THAAD PROGRAM HAS NEW LEADER

Col. Anthony Potts, center left, passed the Army acquisition directive that established the Terminal High Altitude Area Defense and TPY-2 Sustainment Management Office (T2 SMO) to **Barry Pike**, program executive officer for missiles and space (PEO MS), during a July 8 change of responsibility ceremony. **Col. Ronald Volkin**, right, assumed leadership of the T2 SMO, which oversees sustainment activities for ballistic missile defense systems. Volkin comes to PEO MS from the Resolute Support Headquarters, Kabul, Afghanistan, where he served as the director, CJ-3/5 (Operations and Plans). **Dusty McGee**, left, deputy for the T2 SMO, assisted in the ceremony. Potts will now serve as PEO MS' acting deputy for acquisition and sustainment management. (Photo by Chris Geisel, PEO MS)

CMDS CHARTER CHANGES HANDS

Col. Charles Worshim, incoming project manager for cruise missile defense systems (CMDS), accepted his project management certificate from **Barry Pike**, PEO MS, during a July 22 change of charter ceremony at Redstone Arsenal, Alabama. **Col. Terrence Howard**, outgoing project manager, is retiring after 28 years of service. (Photo by Laura Brezinski, CMDS Project Office)

JAMS GETS NEW PROJECT MANAGER

Barry Pike, PEO MS, left, presented the Joint Air and Missile Systems (JAMS) charter to incoming Project Manager **Col. David Warnick** during a July 6 change of charter ceremony at Redstone Arsenal. **Col. James Romero**, outgoing project manager, retired after 27 years of service. (Photo by Gloria Bell, JAMS Project Office)

NEW PM FOR CLOSE COMBAT SYSTEMS

After three years as the project manager for close combat systems, **Col. Richard J. Hornstein**, right, relinquished his role during a July 21 change of management ceremony at Picatinny Arsenal, New Jersey. Stepping into Hornstein's position is **Col. Jonathan B. Slater**, left. **James Shields**, center, program executive officer for ammunition, officiated. Slater was an operations officer and an acquisition officer and served as the executive officer to the commanding general at U.S. Central Command Joint Theater Support Contracting Command, which supported Operations Enduring Freedom and New Dawn. He also was product manager of the Prophet program, assigned to the Program Executive Office for Intelligence, Electronic Warfare and Sensors. Hornstein will now serve as military deputy for the U.S. Army Armament Research, Development and Engineering Center. (Photo by Erin Usawicz, Picatinny Photographic Services)

CHANGE OF CHARTER FOR PM SSL

Col. Christopher D. Schneider assumed the responsibility of the project manager for Soldier sensors and lasers (PM SSL) during a ceremony July 27 at Fort Belvoir, Virginia, led by **Timothy G. Goddette**, left, deputy PEO for Soldier.

PM SSL, assigned to PEO Soldier, oversees the product manager for Soldier maneuver sensors, an office Schneider headed three years ago, and the product manager for Soldier precision targeting devices. Schneider took over from acting Project Manager **Lloyd Luedtke**, who returns to his previous role as deputy PM SSL. (Photo courtesy of PEO Soldier)

DWTS GETS NEW PRODUCT LEAD

Patrick B. Barnette, right, was named the new product lead for Defense-Wide Transmission Systems (DWTS) at the Program Executive Office for Enterprise Information Systems (PEO EIS) during a ceremony July 28 at Fort Belvoir. **Col. Charles M. Stein**, center, project manager for Defense Communications and Army Transmissions Systems, which includes DWTS, presided over the transition of the DWTS charter from outgoing product lead **Lt. Col. Jeff Etienne**, left. Barnette assumed his new position after serving as the deputy product lead for DWTS since August 2014. (Photo by Linda Valenzano, PEO EIS)

GCSS – ARMY CHARTER CHANGES HANDS

Lt. Col. Preston J. Hayward, right, was introduced as the new product manager for the Global Combat Support System – Army (GCSS-Army) during an Aug. 2 ceremony hosted by **Col. Harry Culclasure**, center, project manager for the Army Enterprise Systems Integration Program, at Fort Lee, Virginia. **Robert J. Zoppa**, left, outgoing acting product manager, resumes his role as deputy product manager. Hayward joins GCSS-Army, which comes under PEO EIS, from the U.S. Army Corps of Engineers in Wiesbaden, Germany, where he served as a contracting officer supporting multiple construction projects in the Balkans and Poland. (Photo by Sherrel Satterthwaite, PEO EIS)

NEW LEADERSHIP FOR NON-STANDARD ROTARY WING AIRCRAFT

Col. Steve Clark, right, assumed responsibility for the Project Management Office for Non-Standard Rotary Wing Aircraft (PMO NSRWA) in an Aug.1 ceremony at Redstone Arsenal, Alabama, officiated by **Brig. Gen. Robert L. Marion**, left, program executive officer (PEO) for aviation. **Col. James Kennedy**, outgoing project lead, transitioned to PEO Aviation headquarters. (Photo by Lillie Whitaker, PMO NSRWA)

FIXED WING WELCOMES NEW PM

Brig. Gen. Robert L. Marion, left, PEO aviation, presented **Col. Tal Sheppard** with the charter of the project manager for fixed wing aircraft in an Aug. 1 change of charter ceremony at Redstone Arsenal. Sheppard, who replaces **Col. Steve Clark**, has served within PEO Aviation since 2007. His most recent position was product manager for the AH-64E Apache production and fielding. (Photo by Lillie Whitaker, PMO NSRWA)

PEO EIS GETS NEW EC2M PRODUCT LEAD

Sergio Alvarez, right, was named product lead for enterprise content collaboration and messaging (EC2M) at PEO EIS during a June 17 ceremony at Fort Belvoir, Virginia. **Thomas Neff**, center, the project director for enterprise services, presided, transferring the charter from **John Howell**, left. Alvarez has held numerous leadership positions throughout PEO EIS and served six years on active duty in the U.S. Marine Corps. (Photo by Racquel Lockett-Finch, PEO EIS)

NEW PRODUCT LEAD AT FMS

Sammi Foong, right, became the new product lead for force management systems (FMS) within PEO EIS at a June 27 change of charter ceremony at Fort Belvoir. The ceremony was hosted by **Col. James "Darby" McNulty**, center, project manager for the Integrated Personnel and Pay System – Army. Foong takes over from **Stephen O'Brian**, left, who served as acting product lead after the retirement of **Dr. David Powers** in March. Foong most recently served as the deputy product lead at Computer Hardware Enterprise Software and Solutions (CHESS), also within PEO EIS. O'Brian now is the deputy product lead for FMS. (Photo by Racquel Lockett-Finch, PEO EIS)

CHESS GETS NEW PRODUCT LEAD

Douglas R. Haskin, right, took over as the new product lead for CHESS within PEO EIS during a July 15 change of charter ceremony at Fort Belvoir. Former Product Lead **Thomas Neff**, left, the project director for enterprise services (ES), passed the charter to Haskin, who previously served as deputy project director at ES and as acting project director before Neff's arrival in May. Joining Haskin at CHESS is the new deputy product lead, **Wayne Sok**, who previously was the PEO's executive officer. (Photo by Racquel Lockett-Finch, PEO EIS)

NEW PRODUCT LEAD AT RCAS

Dennis J. Lujan, right, was introduced as the new product lead for reserve component automation systems (RCAS) during an assumption of charter ceremony July 11 at Fort Belvoir. Lujan, who served in the Army for 20 years, comes to PEO EIS from the U.S. Environmental Protection Agency, where he was division director and information security officer in the Office of Technology Solutions under the Office of the Chief Financial Officer.

During the ceremony, hosted by **Michael Padden**, left, project manager for installation information infrastructure – communications and capabilities, **Sajjan M. George** was presented with the Army Achievement Medal for Civilian Service. After serving as the acting product lead for RCAS for seven months, George resumes his role as the deputy product lead. (Photo by Racquel Lockett-Finch, PEO EIS)

NEW LEADER IN STRATEGIC MISSION COMMAND

Kimberly Reid accepted the charter as the product director for strategic mission command in the Program Executive Office for Command, Control and Communications – Tactical (PEO C3T) during a ceremony July 14 at Aberdeen Proving Ground, Maryland. **Col. Troy Crosby**, project manager for mission command, hosted the ceremony. (Photo by Denise Rule, PEO C3T)

PEO MS GETS NEW C-RAM MANAGER

Barry Pike, center left, program executive officer for missiles and space (PEO MS), passed the Counter-Rocket, Artillery, Mortar (C-RAM) Project Office flag to **James Childress** as Childress assumed responsibility for C-RAM on July 20. **Michael Van Rassen**, left, served as the project director for the past 14 years. **Chief Warrant Officer 3 Kevin Jenkins**, right, assisted in the change of responsibility ceremony at Redstone Arsenal, Alabama. (Photo by Chris Geisel, PEO MS)

NEW AVIATION LOGISTICS ROLE AT PEO EIS

Richard J. Kendig, right, accepts the new charter of product director for Aviation Logistics in a July 13 ceremony at Redstone Arsenal. Hosting the ceremony was **Col. Harry Culclasure**, project manager for the Army Enterprise Systems Integration Program (AESIP), assigned to PEO EIS. Kendig comes to the Aviation Logistics program from the Army's attack helicopter program, where he served as the AH-64 Apache Longbow deputy product manager. (Photo by Heather Putman, AESIP)

NEW DEMIL LEADER AT PEO AMMUNITION

Col. Joseph H. Chan, project director for joint services, presented **John F. McFassel** with the charter of the product director (PD) for demilitarization during a July 19 assumption of management ceremony at Picatinny Arsenal, New Jersey. McFassel takes over from **Carl Roller**, right, who served as acting PD and now returns to his previous role as deputy product director. (Photo by Erin Usawicz, Picatinny Photographic Services)

TACOM WELCOMES NEW CHIEF OF STAFF


Col. Jeffrey D. Witt

The U.S. Army TACOM Life Cycle Management Command, headquartered in Warren, Michigan, welcomed **Col. Jeffrey D. Witt** as its new chief of staff Aug. 1. Witt comes to TACOM from the U.S. Central Command Deployment and Distribution Center, Camp Arifjan, Kuwait, where he served as deputy director. Witt has commanded the 88th Brigade Support Battalion, served on the commanding general's initiatives group for the U.S. Army Sustainment Command, and completed a Training with Industry assignment with SUPERVALU Inc. His service also includes overseas assignments and combat and operational deployments to Haiti, Iraq and Kuwait.

DEPUTY PEO STRI APPOINTED TO SES


Chérie Smith

Chérie Smith, deputy program executive officer for simulation, training and instrumentation, became a member of the Senior Executive Service in a Sept. 30 ceremony officiated by **Maj. Gen. Ole Knudson**, deputy director of the Missile Defense Agency. Smith has more than 30 years of government experience at all levels of technology management and development. She began her career as an enlisted Soldier in the U.S. Army Reserve and served six years on active duty, developing medical scientific software applications at Walter Reed Army Medical Center and the U.S. Army Health Care Systems Support Activity. She served as the program manager for the General Fund Enterprise Business System, establishing the program office and leading the program from initial concept through system development and demonstration. She has also served as acting deputy program executive officer for Soldier.

PICATINNY'S SENIOR AIR FORCE REP RETIRES

Air Force **Col. Barry D. Roeper** retired from active duty at Picatinny Arsenal on July 29, capping a career that spanned three decades. Roeper was the senior Air Force representative on the team of the single manager for conventional ammunition within the Office of the Project Director for Joint Products, part of the Program Executive Office for Ammunition. During his retirement ceremony, Roeper received the Presidential Certification of Appreciation and Legion of Merit medal. Roeper's career included assignments with the U.S. Central Command and the 12th Air Force of Air Combat Command, Davis-Monthan Air Force Base, Arizona. (Photo by Todd Mozes, Picatinny Photographic Services)

MCDONALD ENDS 36-YEAR CAREER

Maj. Gen. Mark McDonald retired from military service Sept. 1 after more than 36 years on active duty. His most recent assignment was as commanding general (CG) of the U.S. Army Security Assistance Command (USASAC), which oversees foreign military sales cases in 153 countries. McDonald's retirement ceremony took place Aug. 6 at the Fires Center of Excellence, Fort Sill, Oklahoma, where he began his military career. **Maj. Gen. Stephen Farmen** succeeded McDonald as USASAC CG.

HIGGS RETIRES AFTER 30 YEARS

Sgt. Maj. Alan D. Higgs, senior enlisted adviser to the program executive officer for simulation, training and instrumentation (PEO STRI), retired from the Army with a ceremony Sept. 23 in Orlando. In more than 30 years of active-duty service to the Army, before which he was a member of the Utah National Guard, Higgs held many positions of responsibility, from team leader to command sergeant major. His last assignment before PEO STRI was as the garrison command sergeant major for Pohakuloa Training Area, Hawaii. He deployed to Kuwait for Operation Desert Storm, to Kosovo as part of the Kosovo Peacekeeping Force and to Iraq twice, as part of Operations Iraqi Freedom and New Dawn.

TACOM MARKS SCHRÖTER'S RETIREMENT

Col. Gerhard P.R. Schröter retired with more than 28 years of active duty, with a July 1 ceremony at the TACOM Life Cycle Management Command (LCMC) headquarters in Warren, Michigan. Schröter had served as the TACOM LCMC chief of staff since August 2015. Previously, he served as the commander of Tobyhanna Army Depot in Pennsylvania. His service included overseas assignments in Korea and Germany, and deployments to Iraq, the Balkans and the Caucasus region. (Photo by Greg Pici, U.S. Army Garrison – Detroit Arsenal)

VAN RASSEN MOVES ON AFTER 14 YEARS

Barry Pike, center, program executive officer for missiles and space (PEO MS), recognized **Michael Van Rassen** with the Army Superior Civilian Service Award for his time as director of PEO MS' Counter-Rocket, Artillery, Mortar Project Office. Van Rassen, who served as the project director for the past 14 years, is retiring from civil service. **Chief Warrant Officer 3 Kevin Jenkins**, left, assisted in the July 20 presentation. (Photo by Chris Geisel, PEO MS)

GENERAL OFFICER ANNOUNCEMENTS

The Chief of Staff, Army announced the following officer assignments:

Maj. Gen. Gwendolyn Bingham received Senate confirmation June 29 for appointment to the rank of lieutenant general and assignment as assistant chief of staff for installation management, Washington, D.C. She most recently served as commanding general (CG), U.S. Army TACOM Life Cycle Management Command, Warren, Michigan.

Brig. Gen. Thomas H. Todd III, deputy CG, U.S. Army Research, Development and Engineering Command and senior commander, Natick Soldier Systems Center, Natick, Massachusetts, received his first star July 2.

Brig. Gen. Michael D. Hoskin, CG, U.S. Army Expeditionary Contracting Command, Redstone Arsenal, Alabama, received an assignment to director for contracting, Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology, Washington, D.C.

Brig. Gen. Paul H. Pardew, director, Forward Operational Contract Support Integration Cell, U.S. Central Command, Qatar, received an assignment to CG, U.S. Army Expeditionary Contracting Command, Redstone Arsenal.

SECTION 3685, TITLE 39, U.S.C.
SHOWING OWNERSHIP, MANAGEMENT AND CIRCULATION

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THEN & NOW
1981 & 2016

REFORM, REAGAN-STYLE

From the Carlucci initiatives of the 1980s to BBP 3.0 today, reform is a central theme of acquisition.

by Mr. Michael Bold

Thirty-five years ago, defense acquisition reform dominated the cover of the July-August 1981 issue of Army Research, Development & Acquisition magazine, the predecessor to Army AL&T.

"Decisions Made on 31 Recommendations to Reduce Costs ... DOD to Improve Management Principles, Acquisition Process."

The cover featured the first page of an April 30, 1981, memo from Deputy Defense Secretary Frank C. Carlucci, and the article stated that Secretary of Defense Caspar W. Weinberger had made decisions on "31 recommendations and issues to reduce costs and improve the acquisition process throughout the Department of Defense. He also announced a charter of acquisition management principles."

The 31 items—soon to be joined by a 32nd—came to be known as the Carlucci initiatives, the spearhead of his Acquisition Improvement Program. Weinberger and Carlucci entered the top DOD posts in January and February 1981, respectively, as members of the Reagan administration. The newly elected president saw his mandate as reviving economic growth at home and expanding American influence abroad. His first term in office saw the largest, most expensive peacetime expansion of the U.S. military. The DOD budget exploded from $142 billion in 1980 to $286 billion in 1985 (30 percent of that increase coming from inflation).

Harold Brown, the previous defense secretary, had centralized acquisition authority in the Office of the Secretary of Defense (OSD). Weinberger believed that centralization had exacerbated cost overruns and led to purchases of hardware that failed to perform as planned. In a process he called "controlled decentralization," Weinberger sought to give the program managers in the military services decision-making authority in the weapon acquisition process.

The time had come, Carlucci wrote, "to make major changes both in the acquisition philosophy and the acquisition process itself. We are convinced that we have now a historic and unique opportunity to significantly improve the Defense acquisition system."

Carlucci, the Army RD&E article noted, "emphasized that the primary objectives in streamlining the DOD acquisition process are reducing costs and shortening the acquisition time."

"Mr. Carlucci pointed out," the article continued, that " 'while DOD should be tough in contract negotiations as part of the buyer-seller relationship, this does not mean that relationships between management and industry should necessarily be adversarial. Industry and government have a shared responsibility and must assume a new spirit of cooperation. A healthy, innovative, and competitive industrial capability is a primary national objective. I direct all top DOD management, in the Office of the Secretary of Defense, Joint Chiefs of Staff, and in the Services, to ensure this is understood at all levels.' "

The ensuing massive defense buildup under Reagan resulted in ramped-up production of the Army's Abrams M-1 main battle tank, the revival of the B-1 bomber,

BREAKING GROUND

Deputy Secretary of Defense Frank C. Carlucci, left, meets Robert S. Dillon, center, U.S. ambassador to Lebanon, and military officials upon his arrival at Beirut International Airport in October 1982. Carlucci's acquisition initiatives, released one year earlier, aimed to bring about much-needed reform, but that effort was hamstrung by the lack of a timetable and an absence of accountability measures. (Photos courtesy of the U.S. National Archives and Records Administration)

DEFENSIVE STANCE

President Ronald Reagan visits with Secretary of Defense Caspar W. Weinberger in November 1983. Reagan's first term in office, from 1981 through 1984, marked the largest peacetime expansion of the U.S. military, and Weinberger aimed to undo previous centralization efforts by returning decision-making authority in the weapon acquisition process to program managers.

TOUCHDOWN
A B-1 bomber lands at Edwards Air Force Base, California, in August 1992, its first flight since April 1981. Reagan reinstated the aircraft as part of an overall plan to grow the U.S. military, during which time DOD's budget grew from $142 billion to $286 billion in just five years.

which had been canceled during the Carter administration, and production of the MX missile. A 600-ship Navy was planned that included 100 new nuclear attack submarines and pulling four Iowa-class battleships out of mothballs.

But with that massive escalation of federal defense spending came problems, in the form of fraud, corruption, mismanagement and waste by DOD and large defense firms—the $435 hammer, the $640 toilet seat and $7,600 coffee makers—resulting in congressional hearings and federal investigations. Some of those investigations led to criminal charges and convictions of defense contractors.

In response, Congress passed the 1983 DOD Authorization Act, which included what has come to be known as the Nunn-McCurdy Act. The provision, written by two Democrats—Sen. Sam Nunn of Georgia and Rep. Dave McCurdy of Oklahoma—requires DOD to report to Congress whenever a major defense acquisition program experiences cost overruns that exceed certain thresholds.

Adding to the Pentagon's woes were fluctuations in annual congressional funding that left some programs sputtering. The services, meanwhile, balked at many of the initiatives, especially multiyear procurements. Such procurements required heavy up-front funding, which the services feared hampered managers' flexibility and left fewer resources available for other worthy programs.

"The Carlucci initiatives were to be the be-all and end-all of positive change in the Pentagon," The New York Times in 1983 quoted Sen. Charles Grassley as saying. The Iowa Republican, who revealed many of the details of the profligate Pentagon spending, continued, "But they had no teeth. There was no timetable, no accountability and no clear indication that the initiatives were a serious undertaking."

Dr. J. Ronald Fox has made a career of studying defense acquisition. He's a professor emeritus at the Harvard Business School, served as assistant secretary of the Army for procurement, contracting and logistics, and before that served as deputy assistant secretary of the Air Force. In 2006, he was named to the Defense Acquisition University Hall of Fame.

In 2009, the U.S. Army Center of Military History asked him to literally write the book on defense acquisition reform. His monograph, "Defense Acquisition

Reform, 1960–2009: An Elusive Goal," looks at the reform initiatives of that period (including some 27 major studies of defense acquisition commissioned by presidents, Congress, defense secretaries, government agencies, think tanks and universities). Most of the efforts, he noted, arrived at the same conclusions and made similar recommendations.

In an interview with Army AL&T in July, Fox agreed with critics who said the Reagan defense buildup lacked a strategic game plan, and he said that eventually the services would require guidance from OSD.

"The perspective of the services is often not identical to what it is at OSD," he said. "… If you're in a program and there are a number of senior officers who have committed themselves to that program, then, 'Yeah, there may be schedule slippages and cost growth, but you know what? I think we can get more money. So we can go back and get some money.' … I think OSD has a much broader perspective across the services, and I think often has a greater commitment to cost control. … I don't think you can just turn that all over to the services, because the incentives of the services are maximizing the effectiveness of that service."

In 1985, Nunn and Republican Sen. Barry Goldwater of Arizona wrote a report on DOD spending that concluded the department was poorly run and that combat readiness was imperiled. The report found no correlation between spending more and acquiring better defense. It also blamed congressional meddling for driving up costs. Later that year, House Armed Services Committee Chairman Les Aspin, a Wisconsin Democrat, launched a series of hearings on defense spending, finding "skimpy improvements in the U.S. defense posture

DEFENSE BUILDUP

M-1 Abrams main battle tanks line the pier in Savannah, Georgia, for loading aboard the rapid-response vehicle cargo ship USNS ALGOL for shipment to Saudi Arabia in August 1990 to support Operation Desert Shield. In response to massive defense spending during the early 1980s, which included ramped-up production of the Abrams, Congress passed the Nunn-McCurdy Act, which requires DOD to report to Congress whenever a major defense acquisition program experiences cost overruns exceeding established thresholds.

despite the huge increases in defense spending over the years."

In 1986, the General Accounting Office, now the Government Accountability Office, issued a report stating that only eight of the original 32 Carlucci initiatives had been fully implemented. Carlucci and DOD disagreed vigorously with that analysis.

A little over four years after the Carlucci initiatives were issued, Reagan established the President's Blue Ribbon Commission on Defense Management—known as the Packard Commission after its chairman, David Packard, co-founder of Hewlett-Packard Co. and a former deputy defense secretary—and the next round of defense acquisition reform began.

The latest attempt at changing the way DOD does business was Better Buying Power (BBP), introduced in 2010 by Ash Carter, then the undersecretary of defense for acquisition, technology and logistics (USD(AT&L)) and now the secretary of defense. That was followed by BBP 2.0 in 2012 and BBP 3.0 in 2014, crafted by USD(AT&L) Frank Kendall.

What does Fox think of BBP? "I think it's a good start," he said. "It's in the implementation and follow-up where things fall apart."

For a historical tour of Army AL&T over the last 56 years, go to the Army AL&T archives at ***http://asc.army.mil/web/magazine/alt-magazine-archive/****.*

MR. MICHAEL BOLD provides contract support to the U.S. Army Acquisition Support Center. He is a writer and editor for Network Runners Inc., with more than 30 years of editing experience at newspapers, including the McClatchy Washington Bureau, The Sacramento Bee, the San Jose Mercury News, the Dallas Morning News and the Fort Worth Star-Telegram. He holds a B.J. in journalism from the University of Missouri.

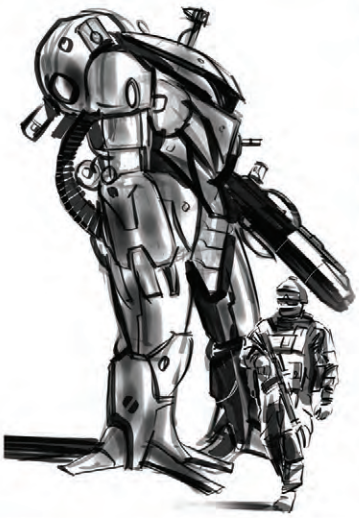
32 FIXES

Carlucci's acquisition reform initiatives:

1. Reaffirm acquisition management principles.
2. Increase use of pre-planned product improvement.
3. Implement multiyear procurement.
4. Increase program stability.
5. Encourage capital investment to enhance productivity.
6. Budget to most likely costs.
7. Use economical production rates.
8. Assure appropriate contract type.
9. Improve system support and readiness.
10. Reduce administrative costs and time.
11. Budget for technological risk.
12. Provide front-end funding for test hardware.
13. Reduce governmental legislation related to acquisition.
14. Reduce number of DOD directives.
15. Enhance funding flexibility.
16. Provide contractor incentives to improve reliability and support.
17. Decrease Defense Systems Acquisition Review Council (DSARC) briefing and data requirements.
18. Budget for inflation.
19. Forecast business base conditions.
20. Improve source selection process.
21. Develop and use standard operation and support systems.
22. Provide more appropriate design-to-cost goals.
23. Implement acquisition process decisions.
24. Reduce DSARC milestones.
25. Submit mission element need statement with service program objective memorandum.
26. Revise DSARC membership.
27. Retain undersecretary of defense for research and evaluation as the defense acquisition executive.
28. Raise dollar thresholds for DSARC review.
29. Integrate DSARC and Planning, Programming and Budgeting System process.
30. Increase program managers' visibility of support resources.
31. Improve reliability and support.
32. Increase competition.

THE YEAR IS 2040

WHAT DO YOU SEE?



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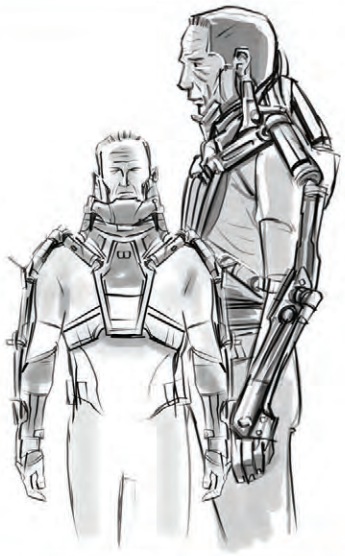

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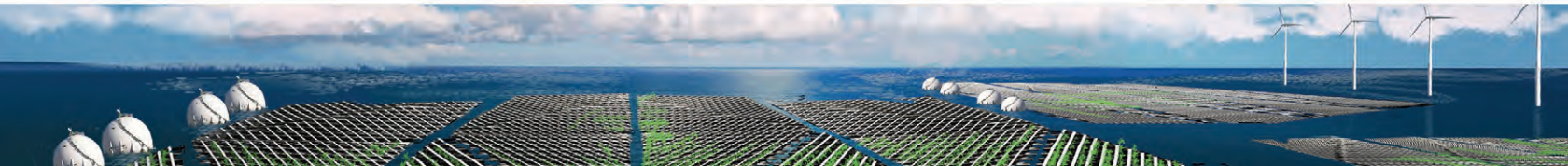

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—**The Hon. Frank Kendall**
Undersecretary of the Army
for Acquisition, Technology and Logistics
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1986
Goldwater-Nichols DOD Reorganization Act

Secretary of Defense Management Review

1989

1985
Packard Commission

1989
Operation Just Cause (Panama)

1982
Nunn-McCurdy Act

1989
ARMY ACQUISITION CORPS ESTABLISHED

1972
1979
Office of Management and Budget Circular 109 published

1971
Fitzhugh Commission

Congressional Commission on Government Procurement

1976

1981
Carlucci Initiatives

1969
Packard Initiatives

1955-1975
VIETNAM ERA

1947-1991
COLD WAR

1962
1964
The Weapons Acquisition Process (Harvard Business School case studies)

1955
Advanced Research Projects Agency established

1955
Robertson Committee

1958
DOD Reorganization Act

1950-1953
Korean War

National Security Act

1947

1949
Hoover Commission

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