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ARMY AL&T

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APRIL–JUNE 2013

BETTER BUYING POWER

A SHOT OF COMPETITION
Getting more value in small-caliber ammo

BBP, FROM THE TOP
A Q&A with Hon. Frank Kendall

COE PLUS
The Common Operating Environment, enhanced

From the Editor-in-Chief

TALK BACK

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Albert Einstein is known for defining insanity as "doing the same thing over and over again and expecting different results."

This is one of the key principles driving us toward greater affordability and productivity in defense spending. Using the same methods year after year that have led to record cost overruns or delayed delivery dates and expecting better results is, by this definition, insanity. Not requiring strong professional qualifications for all acquisition workforce members while insisting on them in the commercial sector, or not incentivizing industry and government but expecting best price is, again, insanity.

Running government acquisition like a business: Now that's Einsteinian genius.

Breaking the paradigm of "business as usual" and changing the entire management philosophy of government acquisition is the intent behind Better Buying Power (BBP) 2.0, championed by the Honorable Frank Kendall, the undersecretary of defense for acquisition, technology and logistics (USD(AT&L)). This cultural shift has not happened overnight. More than two years ago, then-USD(AT&L) Dr. Ashton Carter and Kendall jointly issued the initial BBP guidance to the acquisition community to deliver better value to the taxpayer and the warfighter. While significant gains have been realized, the past two years also have uncovered other areas needing attention.

Initially, BBP consisted of 23 principal actions to improve efficiency in five major areas: target affordability and control cost growth; incentivize productivity and innovation in industry; reduce nonproductive processes and bureaucracy; promote real competition; and improve tradecraft in services acquisition. BBP 2.0 maintains these areas of effort, but now encompasses 36 total initiatives organized in seven focus areas.

Reflecting the importance of competency across the acquisition workforce, BBP 2.0 introduces a new focus area to support, recognize and improve the professionalism of acquisition workforce members. In addition, BBP 2.0 includes new initiatives focused on enforcing affordability caps; incentivizing industry by aligning profitability more tightly with DOD goals and employing appropriate contract types; and increasing the effective use of performance-based logistics, to name just a few.

In this issue of Army AL&T, you will see multiple examples of how the Army has saved billions while embracing the tenets of BBP: It has shortened manufacturing development phases, actively engaged small businesses, implemented affordability constraints, incentivized program managers and increased the professionalism of the acquisition workforce—all with the goal of achieving best value for the taxpayer and the warfighter.

The Army is not the only organization transforming business practices to keep pace with today's ever-changing fiscal landscape. In "Critical Thinking," read how the No. 1 warehouse retail chain, Costco Wholesale Corp., tackles some of the same issues facing the Army, continually examining all aspects of its operations and, if necessary, making changes to stay on top.

Ultimately, it's the people that make better buying power possible, as the new focus area in BBP 2.0 demonstrates. In this issue's "Spotlight," learn about the professionalism and initiative of one of our 42,000 Army Acquisition Workforce members, Cheryl Maggio, as she leads efforts to eliminate America's chemical weapons stockpile.

It is too easy to forget the many things our workforce does well, and instead focus on the few things that do not go well. So, I hope you will take a few moments to read this issue and catch up on all the great efforts taking place throughout the Army Acquisition Workforce. Please share this magazine with other acquisition professionals; it is online at **http://armyalt.va.newsmemory.com/**. If you have any comments or story suggestions, please contact me at **armyalt@gmail.com**.

Nelson McCouch III
Editor-in-Chief

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ARMY AL&T

APRIL–JUNE 2013

FEATURES

ON THE COVER
Much of Better Buying Power is about balancing capabilities, costs, resources and much more—with an unwavering focus on the bottom line, which is to deliver needed equipment to the Soldier at the best value to the taxpayer.

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By order of the Secretary of the Army

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SUPPORTING THE SOLDIER
Ultimately, the reason the Army strives to instill the highest standards of professionalism in its acquisition workforce is to get the best equipment at the best value for the Soldier. Here, 1LT Dominic Lanzillotta of 4th Battalion, 17th Infantry Regiment, 1st Brigade Combat Team (BCT), 1st Armored Division signals to Soldiers following him on a patrol in the village of Sarkari Bagh, Kandahar province, Afghanistan, Feb. 25. (Photo by SSG Kristen Duus, 1st Stryker BCT, 1st Armored Division (1/1 AD))

FROM THE ARMY ACQUISITION EXECUTIVE
THE HONORABLE HEIDI SHYU

THE POWER *of* BETTER BUYING

Maintaining efficiency during tough times

This issue focuses on our continued emphasis in achieving better buying power for the Army. Since its inception in 2010, the Better Buying Power initiative has resulted in significant accomplishments. It has proved timely, as these efforts to achieve efficiency in our programs and embrace best-value business practices have helped to prepare us for the budget challenges we face now and into the foreseeable future.

The success of the Better Buying Power initiative is attributable to both its comprehensiveness—looking at cost control, competition, affordability analysis etc.—and its timeliness, coming as we transition from a decade of combat into a period of constrained resources in which we can no longer rely on the funding created for overseas contingency operations.

MEASURABLE PROGRESS

I'm very proud of our Army's efforts to embrace and implement the Better Buying Power initiative. Our dedicated commitment has resulted in measurable progress and tangible savings for DOD and the taxpayer:

- The successful execution of multiyear production contracts for the CH-47F Chinook and 537 UH-60 Black Hawk aircraft has lowered procurement costs by nearly $709 million.
- More than $286 million was saved through negotiated contracts for the High Mobility Multipurpose Wheeled Vehicle.
- In another example of multiyear competition, the Family of Medium Tactical Vehicles program saved more than $575 million.
- We generated $66 million in savings in buying the double V-hull Strykers and nuclear, biological and chemical reconnaissance vehicles (NBCRVs) using a single contract.
- In an example of leveraging real competition, the Joint Tactical Radio System Enterprise Business Model produced at least $500 million worth of efficiencies in the procurement of the Multifunctional Distribution Information System – Low Volume Terminal radio.

Another tenet of Better Buying Power calls for building stronger partnerships with the requirements community to control costs. Making affordability a key performance parameter in our acquisition programs requires flexibility to trade or modify requirements to meet the cost thresholds.

We accomplished this in the Joint Light Tactical Vehicle program. The program's technology development phase was used to demonstrate the integration of mature technologies as a complete system. The results were then used to refine the requirements through the use of cost-informed trades in close partnership with the Army and U.S. Marine Corps user communities, which yielded a set of achievable, affordable requirements.

SUCCESSES IN SAVING
In its pursuit of better buying power, the Army has saved billions of dollars across the spectrum of acquisition programs, including about $709 million in procurement costs saved by executing multi-year production contracts for the CH-47F Chinook and 537 UH-60 Black Hawk helicopters. Here, Black Hawks and Chinooks assigned to Task Force Brawler, 4th Battalion, 3rd Aviation Regiment simultaneously begin a daytime mission Jan. 18 from Multinational Base Tarin Kowt, Uruzgan province, Afghanistan. (Photo by SGT Scott Tant, 3rd Combat Aviation Brigade)

This effort allowed the Army to reduce the length of the subsequent engineering and manufacturing development phase from 48 months to 33 months, and to challenge contractors to reduce manufacturing costs to meet a target cost of $250,000 per unit. This is an example of what we need to continue to do in our programs.

Our renewed emphasis on affordability analysis and caps to control cost growth has profoundly influenced our planning and execution of current and future acquisition programs. The Army has already implemented affordability constraints in many programs, such as the aforementioned Joint Light Tactical Vehicle and the Ground Combat Vehicle. This analysis, accomplished within and across weapon system portfolios, continues to be a major priority for me as I conduct regular program reviews with my PEO community.

I have also emphasized using Better Buying Power 2.0 to focus the role of small business in driving our innovation and fostering competition in Army Acquisition. The Army continues to lead in this critical area. In FY12, the Army's small business participation amounted to $22.1 billion, more than 27 percent of total Army spending, reflecting our commitment to small business opportunities.

'SHOULD-COST' EFFORTS

Should-cost principles have been used to incentivize our program managers to achieve value for the warfighter while lowering cost. Over the past year, the Army has executed numerous should-cost initiatives in Acquisition Category I, II and III programs, with significant success across all three ACAT levels. We are the only service to accomplish should-cost success in all three categories.

In essence, we incentivize program management teams to examine all cost assumptions based on the history of a given program. We challenge our program management teams to seek creative ways to reduce management

costs. For example, can we reduce costs by examining management efficiencies? Do we really need to build in software development or testing costs at the same levels in a fairly mature program? By examining our assumptions about what a program will cost, we can come to a better understanding of what a program should cost. Overall, we executed some 219 should-cost initiatives in FY12.

As a result, the Army achieved considerable savings in the Stryker program as we combined double-V hull and NBCRV buys, while pursuing efficiencies gained in test methodology. Existing test data were used effectively, and test events were combined to achieve efficiency. This initiative exceeded expectations.

The M855A10/M856A1 Enhanced Performance Round is another program in which we achieved savings by using should-cost analysis. We accelerated cost reduction efforts in the ammunition production process, used a common bullet cup, developed a high-speed cold heading process and decided to conduct production at Lake City Army Ammunition Plant, MO.

We've found that should-cost/will-cost methods for ACAT III programs have been particularly successful. They are often the programs with the tightest budgets, so gaining efficiencies there makes a big difference. We intend to continue building on that success.

BUILDING A BETTER NETWORK
The strategic modernization planning effort is a key element of the Army's quest for efficiencies, and the tactical network is a high priority in this effort. Here, Soldiers with 4th Brigade, 10th Mountain Division at Fort Polk, LA, receive new equipment training Jan. 14 in Capability Set (CS) 13. CS 13 is the Army's first package of network communications equipment that provides integrated connectivity throughout the entire brigade combat team. (Photo by MAJ Rachael Hoagland, System of Systems Engineering and Integration Directorate)

A PROFESSIONAL WORKFORCE

Since 2009, Army Acquisition has been working toward adding nearly 2,000 professionals to the ranks of the AL&T workforce, under the Growing the Acquisition Workforce initiative at each end. To date, the Army has hired more than 1,700 new acquisition professionals. Army Acquisition will continue striving to meet our goals as set forth by the Secretary of Defense in April 2009.

But the Army's commitment to the workforce is not just about numbers. It's about professionalism—high standards for key leadership positions and strong professional qualifications within every one of the 14 acquisition career fields. We have focused on ensuring that acquisition personnel get the education, training and

OUR RENEWED EMPHASIS ON AFFORDABILITY ANALYSIS AND CAPS TO CONTROL COST GROWTH HAS PROFOUNDLY INFLUENCED OUR PLANNING AND EXECUTION OF CURRENT AND FUTURE ACQUISITION PROGRAMS.

AS MISSIONS EVOLVE, SO DOES FUNDING

The Better Buying Power initiative comes at a good time, as the Army transitions from a decade of combat into a period when it can no longer rely on funding created for overseas contingency operations. Here, Soldiers with 4th Battalion, 17th Infantry Regiment, 1st Brigade Combat Team, 1st Armored Division patrol Feb. 23 near the village of Mansurabad in Kandahar province, Afghanistan. (U.S. Army photo by SSG Kristen Duus, 1/1 AD)

experiences required of their positions, and the results are telling: 92.5 percent of the workforce is certified as required by the Defense Acquisition Workforce Improvement Act or is within the allowable grace period, an all-time high rate.

In addition, our goal is to ensure that our acquisition personnel remain current by requiring at least 80 Continuous Learning Points every two years, so that their skills stay relevant. We are proud to have had the opportunity to pilot new acquisition education, training and experience programs to ensure that we address acquisition competencies at every level, critical skill set attainment and leadership development. The warfighter depends on you for leadership, because it is you we select to manage acquisition programs and invest valuable public resources.

THE WAY AHEAD

A key feature of Better Buying Power 2.0 includes a call for long-term investment planning to drive efforts toward affordable programs. We initiated a strategic modernization planning effort, starting with an understanding of emerging threats, national priorities and capability gaps; it links a detailed analysis of our current programs of record and planned investments in science and technology across a 30-year timeframe. The output of this process will be a detailed road map for our future capabilities across the acquisition life cycle, aligning S&T investments with our programs of record, which

in turn are mapped to long-term sustainment planning.

It's important to take this long view, because in our current fiscal environment, we cannot afford to make the wrong investments. By taking a long-term outlook, we prioritize and synchronize our modernization and sustainment efforts to ensure that tomorrow's Army continues to be the best-equipped force in the world.

CONCLUSION

The strides we have made already in achieving better buying power are impressive. The inventive ways in which the workforce has implemented new ideas are encouraging. The focus of the Better Buying Power initiative and our emphasis on professionalism of the workforce are critically important to our success.

I look forward to working with you to implement Better Buying Power 2.0 in Army Acquisition programs. We have tough challenges now and in the future, and our commitment to these sound practices will help us to succeed.

A CHANGING LANDSCAPE

Better Buying Power takes a comprehensive look at all aspects of acquisition—including cost control, competition and affordability—helping Army Acquisition to establish a long-term view and make the right investments in modernization and sustainment with increasingly constrained funding. Here, troops from 2nd Squadron, 11th Armored Cavalry Regiment conduct a dismounted patrol Feb. 14 at the National Training Center, Fort Irwin, CA. (Photo by SPC Adam Hoppe)

Riding Out

the STORM

Better Buying Power initiatives play crucial role as Army deals with funding uncertainties, sequestration cuts

by Ms. Margaret C. Roth

MAKING RESET A PRIORITY
Despite severe fiscal constraints, the Army must continue to reset and upgrade its equipment. Aging platforms such as the Bradley fighting vehicles, M113 family of vehicles and M109 self-propelled howitzer are due for modernization and replacement. Here, a Soldier with the 2nd Armored Brigade Combat Team, 1st Infantry Division keeps watch from a Bradley Feb. 24 during an exercise at the National Training Center, Fort Irwin, CA. (DOD photo by E.J. Hersom, Joint Hometown News Service)

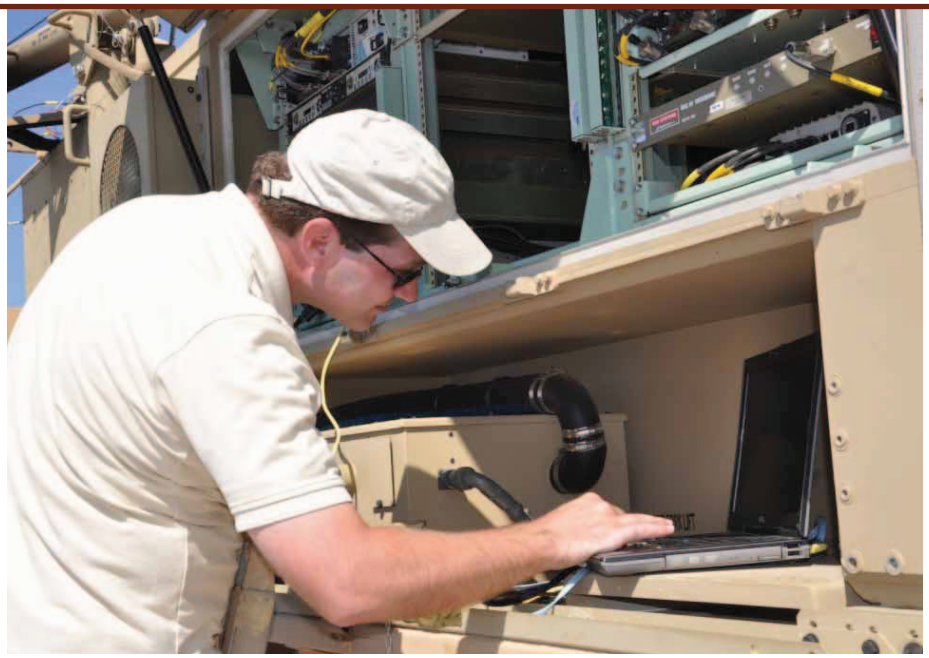
As if the challenges of declining budgets and an upcoming drawdown weren't enough to keep the Army on fiscal alert, the effects of sequestration and stopgap funding have amplified intensely the need for better buying power (BBP).

Throughout the Army and DOD, a "perfect storm"—also described as a trifecta—of operating under a continuing resolution (CR), the harsh cuts resulting from sequestration, and the decline of funding in the overseas contingency operations (OCO) and Operation and Maintenance, Army (OMA) accounts makes BBP initiatives all the more important, even as it tests the limits of BBP.

"Sequestration and the continuing resolution work against everything we are trying to accomplish," said Frank Kendall, undersecretary of defense for acquisition, technology and logistics (USD (AT&L)), in response to questions from Army AL&T Magazine. (See Q&A on Page 20.) "Unpredictable, unstable funding directly impairs the department's ability to maximize its buying power.

"Nevertheless, BBP is about creating efficiencies, in large part through an emphasis on implementing basic acquisition practices and policies in a smart and professional manner. Its implementation makes sense in any fiscal environment, but especially now," he said. "We must meet our warfighters' needs while remaining vigilant stewards of the taxpayers' dollars. Better Buying Power directly helps us to achieve this goal, and our warfighters need our best efforts now more than ever."

Heidi Shyu, the assistant secretary of the Army for acquisition, logistics and technology (ASA(ALT)), sounded a similar note during a Feb. 20 panel discussion, titled "Better Buying Power and Affordability," at the Association of the United States Army's (AUSA's) Institute of Land Warfare Winter Symposium and Exposition in Fort Lauderdale, FL. Shyu, who chaired the discussion remotely because she was working on BBP policy, called sequestration "the very antithesis of management and planning investment that we have stressed in the last couple of years."



INCENTIVIZING INDUSTRY
To be successful, Army leadership emphasized that BBP must proceed as a team approach with private industry to make certain that the Soldiers get what they need when they need it. Here, John Hammond, a field support representative and software engineer with General Dynamics Corp., checks on a Simple Network Management Protocol at Fort Bliss, TX, Sept. 19, 2012, in preparation for Network Integration Evaluation 13.1. (Photo by SGT Richard Gilbert, 2nd Brigade Combat Team, 1st Armored Division)

The significant changes imposed by the existing fiscal situation, the fiscal turmoil of sequestration, which took effect March 1, and stopgap funding under the CR together "threaten to undermine our current effort to implement cost-effective strategies in acquisition programs," she said. Congress mandated that military programs be cut by 9 percent on average, with an exception for military pay.

Subsequently, on March 22, Congress averted a government shutdown by passing a CR that provides spending for the rest of FY13, which ends Sept. 30. The measure relieves the uncertainty caused by having to operate at stopgap funding levels similar to last year's and allows the Army to address the shortfall in the OMA account. The new CR does not, however, cancel the automatic cuts that took effect March 1 with sequestration; it just gives DOD more money to work with.

The BBP initiatives promise to help in this regard. Experience to date with the BBP initiatives championed by Kendall and his predecessor, Dr. Ashton Carter, shows that "dedicated emphasis on affordability and sound management results in tangible progress," Shyu said. (See related article on Page 4.) "But we have much work that remains. … The reality is that the Army's acquisition community must continue to prioritize several key missions regardless of the current and projected fiscal outlook."

SPENDING PRIORITIES

First and foremost in mission priorities, Shyu said, is support for ongoing combat operations and Soldiers' needs in Afghanistan. "The need for safety of our troops remains our top priority and focus," she said.

Another ongoing priority is the planned retrograde of equipment supporting Operation Enduring Freedom (OEF), scheduled for completion by the end of 2014. "The retrograde will present significant logistical challenges for the Army as we undertake the accountability and transfer of large volumes of weapon systems and equipment [built up] over the course of 12 years of war," Shyu said.

In conjunction with the drawdown, the Army will be resetting and modernizing its inventory of equipment because much of the equipment used in war needs repair, and some modernization was deferred to focus on the war effort. Aging platforms such as the Bradley fighting vehicles, M113 family of vehicles and M109 self-propelled howitzer are due for modernization and replacement to ensure the Army's readiness to meet future security needs in a networked combat environment.

"All of this work must be done, so we have worked diligently to ensure that we make the best use of increasingly scarce public resources, which we regard as a public trust," Shyu said.

PROGRAMMATIC IMPACTS

In a presentation Feb. 22 at the AUSA Winter Symposium, LTG James O. Barclay III, deputy chief of staff (DCS) of the Army, G-8, noted that sequestration could continue for years to come.

"I'll be honest with you, we're facing some tough times in FY13. But I think what is really not being captured … is the fact that sequestration is not just FY13. We have nine more years of sequestration facing us unless the law is changed. … [F]or the next nine years, we're going to have cuts that are going to have direct impacts on what we do with our Army, force structure-wise, readiness-wise and modernization-wise," he said.

Continued sequestration would mandate a total dollar amount for spending reductions, and "the Army can then decide where to put those cuts," subject to Pentagon, White House and congressional approval, Barclay said. "That's why it's important to understand where we want to be in the future with our force, because you'll make those decisions looking through the lens of cost and risk and deciding, do you stretch entire programs, do you terminate programs? Now I look at things through about three different lenses," Barclay said:

- Cost-effectiveness, keeping in mind a force that is trained, manned and equipped to meet the missions the Army is given.
- Timing, weighing those decisions the Army can or must make now versus those that it can put off for one to three years. "As you take a five-year programmatic look, you've got to also look at the extended program, looking out 10 or 15 years," Barclay said.
- Risk, not only the monetary implications but also what they will mean for the force and the leadership as the Army moves forward.

The Army's force structure is always a vital consideration, Barclay said, along

THE FURLOUGH FACTOR

Another issue to consider while implementing BBP is that the civilian workforce is now subject to a furlough, with about 250,000 Army civilians currently required to take 20 days without pay during the rest of FY13. Here, employees of the U.S. Army Installation Management Command attend a town hall briefing about the furlough at Fort Sam Houston, TX, Feb. 22. (Photo by Robert Dozier, Family and Morale, Welfare and Recreation Command)

with modernization and readiness. "You have to ensure that you have a balance … or you are at risk of creating hollowness in one of those areas or across the entire Army," he said.

Sequestration has a number of significant specific impacts, Barclay said. "All along, we've said that when we finish in Afghanistan, we would probably have somewhere between two and three years of reset to get our Army back to where it needed to be," Barclay said. With sequestration, "we won't be able to reset in two to three years after we bring the last forces home."

In the area of modernization, "We're going to extend the timelines of our modernization programs," he said—for example, the CH-47 Chinook, AH-64 Apache and UH-60 Black Hawk helicopters. "We're just pushing the final year of when we would complete them out into the future."

Over the longer term, each program affected by cuts is likely to see delays, higher costs and greater program risks, Shyu said. "Current-year activities and procurement buys will be late or reduced to meet sequestration targets, with no assurance that funding will be restored in the future years. These changes will extend program schedules, increase our unit costs and add to our programs' overall risk next year and beyond," she said.

VIRTUAL TRAINING
The Army is looking at ways to conduct training at lower cost by maximizing the use of live, virtual, constructive approaches. Here, Soldiers with the 167th Theater Sustainment Command (TSC), Alabama Army National Guard practice rifle marksmanship March 2 at a simulated firing range on Fort McClellan, AL, using the Fire Arms Training System. (U.S. Army photo by PFC Jeremiah Raines, 167th TSC)

For the workforce, sequestration threatens to reduce professional military education classes "to only those that are promotion-tied requirements," Barclay said. And, of course, the civilian workforce is now subject to a furlough, with about 250,000 Army civilians required to take as many as 14 days without pay before the end of FY13.

The furloughs come at a time when the AL&T workload is expected to increase, Shyu said, particularly in the area of contracting, because sequestration triggers widespread efforts to terminate or modify a large number of existing or pending Army contracts. "The burden of the contracting workforce, charged with helping the Army achieve the best value executing contracts in a timely manner, will be significant," Shyu said.

Overall, "The potential loss of critical expertise through indiscriminate budget cuts jeopardizes unique skills sets that are critical to our Army's future," she said.

MG Thomas W. Spoehr, director of program analysis and evaluation in the Office of the DCS, G-8, noted in a presentation Feb. 20 at the AUSA Winter Symposium that the Army's total obligation authority over time is not growing at a rate commensurate with inflation, which was 2 percent as of February. "That alone is going to put pressure within the Army. And so Army buying power goes down precipitously with sequestration, but even without sequestration, the Army is losing buying power," Spoehr said.

In sum, the challenges of improving buying power in the Army and DOD could hardly be greater, given the current fiscal conditions.

BBP ACCOMPLISHMENTS

While the fiscal picture is not pretty, the

Army is looking at it in an increasingly disciplined way through a number of lenses, including "will-cost/should-cost" analysis, capability portfolio review, strategic modernization planning, and greater sharing of resources among the military services. "We have built a very, very effective Army, but it isn't terribly efficient today," Spoehr said. "And so we're going to have to change that paradigm."

From the G-8's perspective, this calls for:

- Greater reliance on Joint and Coalition programs and partners, "to ensure that we take a hard look at every opportunity we can to integrate wherever we can to meet a capability or to cover a capability gap," Barclay said.
- Scalable equipment, "not only in capabilities but [also] size, that can be applied to tailorable formations," Barclay said, to enable Soldiers to conduct a variety of missions.
- Staggered modernization, meaning incremental system changes and different variants as well as extended timelines.
- Smaller procurement objectives, depending on the Army's final end strength. "We don't know that yet. Is 490,000 the bottom? The size of that force will drive what those procurement objectives are," Barclay said.
- Greater reliance on commercial-off-the-shelf and government-off-the-shelf products, "trying to align the threshold requirements that we're developing within the available technology that exists and not asking for more than what we know is available or out there," Barclay said.
- Weapon systems composed of upgradable components and subsystems, "so as you do get improved technology, you can plug and play those components and subsystems into those base programs [or] base vehicles to continue to modernize them as you move forward," Barclay explained. "We're also going to have to divest our old systems where they're not cost-effective anymore, based on the life-cycle cost and where we're going in the future with our dollars."
- Incentivizing the industrial base to reduce cost. "This is going to have to be a team approach," Barclay said. "It's not just about the services; it's about our industry partners and how we get after and meet these challenges to ensure that we both give the Soldier what he needs at the time he needs it."
- Lowering the O&M costs of sustainment, using approaches such as condition-based maintenance.
- Optimizing training. "We've got to be able to leverage those dollars and ensure that the live, virtual, constructive construct is maximized to give you better training that is more affordable," Barclay said. For example, he said, five years ago about 18 percent of the flight training at Fort Rucker, AL, was done in simulators; now the proportion is just under 40 percent and the training costs 37 percent less. "We've been working at this for several years, but we've got to get the entire Army behind it," he said.

"WE MUST MEET OUR WARFIGHTERS' NEEDS WHILE REMAINING VIGILANT STEWARDS OF THE TAXPAYERS' DOLLARS. BETTER BUYING POWER DIRECTLY HELPS US TO ACHIEVE THIS GOAL, AND OUR WARFIGHTERS NEED OUR BEST EFFORTS NOW MORE THAN EVER."

Central to the Army's efforts to set a prudent, workable course for modernization is its new Army Equipment Modernization Strategy (AEMS), online at **http://www.defenseinnovationmarketplace.mil/resources/ArmyEquipmentModernizationStrategy.pdf**, Barclay and Shyu said. It is not program-specific, but rather is written in broader terms to give guidance to the force and inform industry about the Army's future direction.

This strategic planning effort aligns with a key initiative of BBP 2.0, which calls for instituting a system of investment planning to drive affordability targets for acquisition programs, Shyu noted. "We needed a process to prioritize and balance pressing modernization needs for Soldier equipment and development of new capabilities" to solve capability gaps in light of emerging threats, she said.

The AEMS, approved March 4 by Chief of Staff of the Army GEN Raymond T. Odierno and Secretary of the Army John McHugh, identifies critical technologies that will yield the next generation of capabilities. The strategy incorporates input from program executive officers (PEOs) and program managers (PMs) on their equipment life-cycle projections and sustainment costs, including the extent to which equipment use and sustainment costs call for greater capability.

"In this fiscally constrained environment, we must place emphasis into S&T [science and technology] areas that tackle truly the Army's unique challenges, and collaborate across services, national labs, academia and partner nations to solve our common challenges," Shyu said. The AEMS provides a road map that the Army can share with industry "so that we can leverage their IR&D [independent research and development] investments," she said.

"WE HAVE BUILT A VERY, VERY EFFECTIVE ARMY, BUT IT ISN'T TERRIBLY EFFICIENT TODAY. AND SO WE'RE GOING TO HAVE TO CHANGE THAT PARADIGM."

This drive toward a more strategic assessment of Army modernization needs in the near-, mid- and long term has challenged standard DOD planning and budgeting processes, noted Mary Miller, deputy assistant secretary of the Army for research and technology. "We are used to, even comfortable with, developing a plan that lasts five years," she said. "This is culture change." Among other benefits, the long-term assessment has identified conflicts and redundancies in Army acquisition programs, such as planned technology upgrades to systems that have already transitioned to sustainment, Miller said.

"It forces a new look at what else might need to happen," bringing together the PEOs, the S&T community, the requirements community and the Army G-8, she said. "The world of 2030 to 2035 is clearly not going to look like the world of today. Threats and capabilities to address those threats, may, in fact, look very different than what we have fielded. This exercise forces us to look at those eventualities."

In the area of information technology, for example, strategic modernization planning identifies what technology is needed and where it can be inserted as part of an upgrade. It also shows when the Army needs to start investing for replacement platforms.

GETTING MORE FROM BBP

Of the many separate BBP initiatives, applying "should-cost" analysis across programs has had particularly notable results, said MG Harold J. Greene, deputy for acquisition and systems management in the Office of the ASA(ALT), during the BBP discussion at the AUSA Winter Symposium.

"Our savings in FY12 was approximately $370 million that we could point to, where we had concrete savings and we expect more in future years. Our projection right now is $2.5 billion in [FY]13 to 17."

The Army is also seeking efficiencies by leveraging the quick reaction capabilities (QRCs) fielded to the theaters of war in Iraq and Afghanistan, Greene said. "Right now the department's going through a very deliberate process, looking at all of those quick reaction capabilities, and we're categorizing them. We're going portfolio by portfolio."

In the process, the Army is identifying items that add value in the current fight but are not necessarily useful over the long term; those will be maintained until the end of the fight with OCO funds and then retired. Items in capability areas where the Army plans to invest will be maintained using OCO funds and then replaced with something the Army develops through its research, development, test and evaluation and procurement programs. Some items the Army will simply divest.

At the AUSA Winter Symposium, ASA(ALT) leaders discussed a number of lessons learned in their experiences with the BBP initiatives introduced in 2010.

- **Affordability alone is insufficient**—"You can have the most affordable programs coming forward, but if they're not executed and they're not set up for success in delivering fully to Soldiers and to our Army on the timeline that you required, then affordability isn't going to cut it," said LTG William N. Phillips, principal military deputy to the ASA(ALT). "They've got to be executable as well." This entails asking certain fundamental questions, he said:

  "What's the maturity of the system today, and what do [PMs] anticipate maturity might be? What are the risks associated with developing the technology? What is the right balance of risk that both industry and the government should accept? What are the best incentives to provide to industry that will help both of us going forward? And how long will it take to get into production?" (See related article on Page 124.) "And if we look at a development cycle, how long will that development cycle be? If you look at each program, each one is going to be unique in some kind of way. … And once we've done that deep-dive analysis, then we can begin to gather the acquisition strategy and the timelines."

  Increased collaboration among PMs, the S&T community and the U.S. Army Training and Doctrine

Command on writing requirements is helping to make them more affordable and achievable, Miller said. "The technology demonstrations that we've been doing on the S&T side help to inform what requirements can and should be, because we've proven it can be done."

- **No "cookie-cutter" solutions**—"When you look at should-costs, each PM that's managing that program has to look at it holistically," including but not limited to aspects such as technical risk, requirements and test strategies, Phillips said. "There is not one cookie-cutter solution. "You have to dig for the details … find out if there is gold plating within the requirements. It's got to be smart people looking at the excruciating details inside that program to bring it forward."

  There might be a way to introduce an initial capability and then later insert capabilities that were not sufficiently mature at the outset; this incremental approach helped the Army reduce the per-unit cost for the Ground Combat Vehicle from more than $20 million to about $10.5 million, Phillips noted.

- **Efficiencies are everywhere**—Looking holistically at acquisition programs will turn up efficiencies in related areas, said Kevin M. Fahey, the PEO for combat support and combat service support (CS&CSS). For example, he said, "We've done a lot of work on the analysis of a base camp, looking at that capability as a portfolio. And we're doing a lot of operational energy things because we have to. I think you'll see bases shutting down lights during weekends. In some instances, we need to do a better job of monitoring when things are used or not used." The same wide lens will apply as PEO CS&CSS undertakes the retrograde of equipment from Afghanistan, Fahey said. "Retrograde, reset, recap, acquisition programs, everything we do needs to go through that process." He warned, however, that the intense emphasis on BBP could actually create more bureaucracy. "When we get down to having no money, we try to be more efficient. But what I would tell you, from where I sit, [is that] in a lot of instances the bureaucracy gets worse, because people want to make sure that you're doing the right things when you have no money."

- **Expeditionary contracting capability is essential**—"The number one thing we learned out of Operation Iraqi Freedom initially, and then later in OEF, is that we have to have an expeditionary contracting capability inside the Army," Phillips said. "Previously we had relied primarily upon the Air Force, who were subject-matter experts in this field and have been for many years." U.S. Army Materiel Command "has done extraordinary work to build contingency contracting capability," Phillips said. "It ties back directly into better buying power."

  Greene added, "We've learned that we need to embed contracting as part of our routine operations. So now you see that we've tied contracting brigades to ASCCs [Army service component commands] so they're available, they can be part of exercises. … I think the other thing you would notice is that we've made a concerted effort to build that contracting workforce."

THE ROLE OF INDUSTRY

As the Army experiences fiscal pressures from every direction, it is more important than ever to draw on industry's expertise and experience to achieve BBP, its leaders agreed.

"We look to industry for creative proposals to deliver affordable capabilities that meet Army requirements, as well as other ideas to improve efficiency and sound management of our investments," Shyu said. "We're interested in learning more about how we can use management tools and metrics from the private sector to optimize performance of our organic industrial base.

"The Army must retain the organic industrial base that has capably met the needs of a nation at war over the past decade. As we adapt to a postwar period, we will look at creative ways to preserve critical skills and institutional capabilities," she said.

As Miller put it, "We don't corner the market of good ideas. We will need to leverage [industry] investments more than ever to ensure that the Army remains dominant." Industry, academia, foreign partners and the other services have much to contribute, she said.

"The current situation is that such exchanges are fragmentary at best, especially given these hard fiscal times. … We are looking into improving this situation," Miller said, pointing to the Defense Innovation Marketplace at **http://www.defenseinnovationmarketplace.mil/** as a good start. The Office of the Secretary of Defense established this website to facilitate exchanging information relating to government programs.

Industry's help is also critical in the area of developmental testing (DT), Phillips said. "We're looking very closely at the cost of testing. … It doesn't make sense that we would go forward and duplicate, within government, testing that industry has already done. The PMs and the industry partners have to work together, in my view."

"YOU CAN HAVE THE MOST AFFORDABLE PROGRAMS COMING FORWARD, BUT IF THEY'RE NOT EXECUTED AND THEY'RE NOT SET UP FOR SUCCESS IN DELIVERING FULLY TO SOLDIERS AND TO OUR ARMY ON THE TIMELINE THAT YOU REQUIRED, THEN AFFORDABILITY ISN'T GOING TO CUT IT."

Finally, "There really has to be a dialogue between the government and the contractor," Greene said. "We have to understand what's driving the cost of the program, things like where are the price points, so that we can make smart investment decisions." A better dialogue also calls for the government to provide industry with draft requests for proposal (RFPs) and to make better use of requests for information to determine "the art of the possible," he said. "And we'd ask for your honest feedback on that so that we can shape the programs to do smart things, because certainly you have a lot of knowledge that we'd like to get at."

Getting key information out to industry as soon as possible could go a long way to shortening the timeline for executing contracts, Phillips said. "We've been somewhat hesitant to get the draft RFP out because we want to get it better, and get it better, and get it better, and then we want to make sure that all our bosses all the way up the chain of command are in concurrence with our releasing a draft RFP.

"I think we need to take some risk in that area, and we probably will in the future, in terms of getting the requirements out and the drafts out earlier to industry, so that they can review it, comment on it, and we can get real comments back and … execute the process a little bit better, define it quicker and get to the award much sooner."

CONCLUSION

Since BBP was introduced in 2010, much has changed for the Army and DOD. BBP 2.0, released in draft in November 2012 and being finalized as this issue went to press, provides an expanded set of tools with which to weather the fiscal storm. Many of the underlying principles of affordability and cost-effectiveness have been in play for much longer than the BBP initiatives. "But I will tell you that all of those terms have a different meaning today than they had 12 years ago, before we went into this current conflict that we're in," Barclay noted. "Are the times tough? Yes. But … we've been in tough times before. The glass, in my mind, is not half-empty, it's half-full. We just have to figure out the ways to get at after it, because we have a great Army."

"As with BBP 1.0, the key to success will be in the implementation and in the follow-up," Kendall said. "We have a lot of work ahead of us, and the whole budget climate is making it much tougher for everyone to focus on our work, but it's also even more important to do so in these circumstances."

"The Army and the department are making real progress in managing our public resources in a manner that's consistent with the best tradition of good stewardship and dedication to our Soldiers," Shyu said. "I hope that the Army and industry … stay the course."

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STRETCHING MODERNIZATION

Funding constraints are forcing the Army to extend modernization timelines for such programs as the CH-47 Chinook helicopter, the Apache fleet and Black Hawk fielding. Ultimately, the extensions are likely to drive up costs. Here, service members unload a UH-60 Black Hawk helicopter from a C-5 Galaxy transport aircraft at Bagram Airfield, Parwan province, Afghanistan, Feb. 2. (U.S. Army photo by 1LT Henry Chan, 18th Combat Sustainment Support Battalion)

"WE DON'T CORNER THE MARKET OF GOOD IDEAS. WE WILL NEED TO LEVERAGE [INDUSTRY] INVESTMENTS MORE THAN EVER TO ENSURE THAT THE ARMY REMAINS DOMINANT."

BBP *in* FOCUS

The Hon. Frank Kendall takes stock of Better Buying Power initiative as it enters new phase

As DOD brings a renewed and refined focus to the need for better buying power (BBP) during a particularly difficult period, Army AL&T magazine asked the Hon. Frank Kendall, undersecretary of defense for acquisition, technology and logistics, for his perspective. Our five questions focused specifically on BBP 2.0 and what it represents, in both general and specific terms, as acquisition processes continue to evolve. Here are his responses.

Q. When you released your memo on Better Buying Power 2.0 in November, you asked for input on the seven focus areas. What kinds of input have you received, and how will it influence the final release of BBP 2.0?

A. Immediately following the release of the Better Buying Power (BBP) 2.0 draft memo in November of last year, we held a two-month comment period to solicit feedback from members of the acquisition workforce, industry, academia and Congress. In response, we received approximately 90 comments, most of which provided helpful language to clarify BBP 2.0 initiatives, while others will be addressed in future updates to this continuous improvement process. Acquisition leadership, from OSD [Office of the Secretary of Defense] and the services, has also reached out to the workforce through a number of interactions so that we could get direct feedback from the people who will be most affected.

Q. If you had to prioritize the seven focus areas of BBP 2.0, which would be the top three?

A. All of the focus areas in BBP 2.0 are important, and they each contribute to improved acquisition outcomes in unique, complementary ways. Of particular note in BBP 2.0 is the addition of a new focus area that I am convinced is central to achieving greater success: "Improving the professionalism of the total acquisition workforce." This focus area emphasizes the most important single factor in the performance of the Defense Acquisition System: the capability of the professionals in our acquisition workforce to do their jobs more effectively and efficiently.

In the end, it's this capability that matters the most, more so than any policy or regulation we can put in place. As such, we will focus on further improving our workforce by providing its members with the tools and skill sets they need to do their jobs, while incentivizing and rewarding actions that yield the best value for the government. Specifically, we will focus on initiatives to raise standards for those in key leadership positions, moving beyond certification in a functional area to being fully qualified to perform in a specific job, and recognizing and rewarding our best performers.

Additionally, I want to draw attention to another important initiative within this area: "Continue to increase the cost consciousness of the acquisition workforce – change the culture." Cost consciousness is foundational to BBP 2.0's overarching goal of getting more value for the taxpayers' dollars we spend on products and services, all with more modest budgets. The department has areas in which the workforce has already

CONTINGENCY CONTRACTING EXPERIENCE
Lessons learned from Operation Iraqi Freedom on contingency contracting were incorporated into the BBP focus on improving requirements definition with the establishment of a performance work statements database to help units newly arrived in theater compare their requirements with similar ones that implemented previously. Here, contractors from the Bagram Airfield Retrosort Yard load a water tank onto a contracted transportation truck Nov. 2, 2012. (U.S. Army photo by 1LT Henry Chan, 18th Combat Sustainment Support Battalion Public Affairs)

embraced cost consciousness with measurable benefit. The department has often in practice, if not in principle, put other measures of success ahead of cost control: obligation rates, getting on contract quickly, etc. This has to change, and it will require the whole chain of command's focus and a lot of time and persistence to achieve that goal.

Q. In what focus areas do you think DOD has accomplished the most, and where do you think the most work remains to be done?

A. BBP initiatives reflect long-term objectives and strategies; BBP is a process of continuous improvement. In the last two years, the DOD has made significant accomplishments in the following 1.0 initiatives: (1) establishment of affordability caps as requirements for MDAPs [major defense acquisition programs]; (2) institutionalizing the use of "should cost"; (3) establishing senior managers for service contracting; and (4) and focusing the workforce on cost control in general.

We also made good progress in several other areas, including (1) capitalizing on progress payment structures; (2) aligning Defense Contract Management Agency and Defense Contract Audit Agency processes to ensure that work is complementary; and (3) management of intellectual property and the use of open and modular systems. We didn't achieve what we set out to do in creating a superior supplier program, and we decided we needed to revise the guidance on fixed-price incentive fee contracts to provide a greater emphasis on choosing the right contract for the job. We also have more work to do on incentive structures in general.

Significant opportunities exist to promote even greater competition and improve tradecraft in the acquisition of services—an area that comprises over 50 percent of the department's purchases. We and our industry partners are continuing to identify unproductive processes that can be reformed in order to

WORKFORCE PROFICIENCY
Improving the professionalism of the total acquisition workforce is a key focus area in the development of BBP 2.0. Here, instructor Henry Atchley conveys the importance of contract law to students in the Army Intermediate Contracting Course last fall at the Army Acquisition Center of Excellence (AACoE), Huntsville, AL. (Photo by Michele Custer, AACoE)

generate efficiencies and cost savings, and improve the way we deliver products and services to the warfighter.

As with BBP 1.0, the key to success will be in the implementation and in the follow-up. We have a lot of work ahead of us, and the whole budget climate is making it much tougher for everyone to focus on our work, but it's also even more important to do so in these circumstances.

Q. Did the implementation of sequestration change your thinking on the Better Buying Power initiative in any way?

A. Sequestration and the continuing resolution work against everything we are trying to accomplish. Unpredictable, unstable funding directly impairs the department's ability to maximize its buying power. Sequestration's implementation creates a great deal of damage due to the inflexibility of the law. Nevertheless, BBP is about creating efficiencies, in large part through an emphasis on implementing basic acquisition practices and policies in a smart and professional manner. Its implementation makes sense in any fiscal environment, but especially now. It is incredibly important that each member of the department's acquisition workforce focus on sound acquisition planning and execution. We must meet our warfighters' needs while remaining vigilant stewards of the taxpayers' dollars. Better Buying Power directly helps us to achieve this goal, and our warfighters need our best efforts now more than ever.

Q. In the area of contracting, what have Operation Iraqi Freedom, Operation New Dawn and Operation Enduring Freedom taught DOD about BBP, especially about incentivizing productivity and innovation and improving tradecraft in the acquisition of services?

A. Our contingency contracting capability has been built from almost nothing to where it is today on the painful experiences during the early days in Iraq. Going back several years, to before this administration or the BBP initiatives, the department, with the Army in the lead, has made great strides in its ability

to manage contractors on the battlefield. We did incorporate some of the lessons of these experiences into BBP and will continue to do so.

For example, one of the BBP 1.0 and 2.0 initiatives is "Improve requirements definition." Over the past two years, significant effort has been made to establish a database of performance work statements that are available to deployed customers. This is extremely helpful for new units coming into the theater that have new requirements similar to others that have been executed in the past.

Another BBP 2.0 initiative that applies in contingencies and elsewhere is "Strengthen contract management outside the normal acquisition chain" (i.e., installation commanders and others). In these operations, commanders in theater often lacked the necessary visibility over the full range of contracted spend executed in support of their mission requirements. To the extent that they lacked such visibility, their ability to make timely, resource-informed operational decisions was constrained.

What was needed was a process to ensure that commanders were aware of existing contracts in the AOR [area of responsibility] that could be used to satisfy requirements in lieu of awarding new contracts. Such a concept has been demonstrated to be effective, and under BBP 2.0 we are recognizing the fact that the responsibility to manage contracted services is a duty that falls on the commanders who are ultimately accountable for the success or failure of the mission requirements under their purview. GEN [David H.] Petraeus [(USA, Ret)], when he was the commander in Afghanistan, put out a memo stating that "contracting is commander's business." So it is.

INTEGRATING CONTRACT AUDITS
Among numerous areas of progress on BBP 1.0 initiatives, DOD has made significant strides in aligning Defense Contract Management Agency and Defense Contract Audit Agency processes to ensure that contract management and auditing are complementary. Here, SSG Jason Marlow of the 1487th Transportation Company, shift leader at the Kandahar Transit Yard, walks and talks with civilian contractors from the U.S. Army Audit Agency and MAJ Casey Miner, the inspector general from the 311th Sustainment Command (Expeditionary) (311th ESC), March 16 at Kandahar Airfield, Afghanistan. (U.S. Army photo by SGT Phillip Valentine, 311th ESC)

IT'S ALL FOR THE WARFIGHTER
As with BBP 1.0, the key to the success of BBP 2.0—defined as identifying ways to produce more capability, save money and improve the delivery of products and services to the warfighter—will be in the execution of initiatives and the follow-up. Here, SPC Austin Weyermann and fellow Soldiers assigned to 2nd Battalion, 23rd Infantry Regiment provide security March 3 outside a village with a suspected weapons cache during a joint mission with Afghan forces in the Spin Boldak district, Kandahar province, Afghanistan. (U.S. Army photo by SSG Shane Hamann, 102nd Mobile Public Affairs Detachment)

Kick *These* Tires

Exchange program delivers 100 percent Stryker DVH at 60 percent of the cost

by Mr. Michael Dunne and Mr. Bill Good

THE FIRST OF ITS KIND

The DVH exchange program takes a Stryker and replaces the traditional flat-bottom hull structure (FBH) with the newer DVH design while reusing common parts and the mission equipment package to reduce cost. Disassembly of the two initial pilot FBHs began in July 2012, with every step painstakingly documented to pursue further efficiencies and determine exact costs. Here, the first completed Stryker from the DVH exchange program awaits shipment after passing its final inspection. (Photo courtesy of General Dynamics Land Systems)

To maximize its use of fiscal resources, the Army's project manager for the Stryker brigade combat team (PM SBCT) initiated a groundbreaking double-V-hull (DVH) exchange program in response to an urgent requirement for additional DVH vehicles at a reduced overall cost. Their DVH vehicles cost 40 percent less than their newly constructed counterparts and highlight new partnerships between the Army and industry.

Working with Anniston Army Depot, AL, and General Dynamics (GD) Land Systems, the Army developed this pilot program to validate whether components from traditional Stryker flat-bottom-hull (FBH) variants could be refurbished expeditiously and installed on a new, more survivable DVH at a lower cost than producing a new vehicle. The process includes reusing common parts and mission equipment packages (MEPs) from existing FBHs, refurbishing them and reusing the parts in the new DVH structure. The DVH exchange vehicles have the same capabilities as new-production DVH vehicles at an average cost savings of 40 percent, depending on the variant.

Attaining that cost savings took some brainpower and experience. "The exchange program is considerably harder to organize than a new procurement," said LTC Eric Frutchey, PM SBCT's product manager for Stryker fleet management within Program Executive Office Ground Combat Systems (PEO GCS).

"With a new procurement, we know how many vehicles to build and exactly how many new parts are needed. With the exchange vehicles, knowing what will be needed is a bit tougher," he said. "We know how many of each variant we will be exchanging, but we don't know which parts on those variants are going to need to be replaced," he explained.

REUSING MISSION EQUIPMENT
Stryker DVH exchange vehicles have proven to be as effective and reliable as new vehicles, while costing 40 percent less than a newly constructed Stryker. The largest portion of the savings for the exchanged vehicles comes from reusing the MEPS from the FBH vehicle. (Photo courtesy of General Dynamics Land Systems)

During the disassembly of the two initial pilot FBHs, which began in July 2012, every step was painstakingly documented. The engineering effort produced vital working tear-down and rework directions that will be examined to find further efficiencies as well to help determine exact costs.

"The biggest lesson we learned from the pilot vehicles [was that] we need to make sure that the personnel at Anniston have extra time to inspect the vehicles in order to get parts, including long-lead items, on order," Frutchey said. "Many of the parts are easily accessible. However, for longer-lead items, we are taking steps to ensure that we have a small volume on hand to cut down on the lead time," he added.

THE NEED FOR STRYKER DVH

At the end of 2009, evolving threats in Afghanistan led to the generation of an urgent requirement to increase the protection level of Strykers. As a result, the hull design of the flat-bottom Stryker vehicles was changed to a more survivable structure.

During this time, the Stryker modernization program was beginning to develop a similar capability, but it was eight years away from production. The Army and industry believed they could accelerate the effort to meet the urgent need in theater, and the Stryker DVH was born.

From the outset, the DVH program was a success. Design, testing, production and fielding were accelerated, and the vehicle was provided to Soldiers within 18 months.

The DVH provides Soldiers with a level of protection consistent with the Mine Resistant Ambush Protected vehicle while maintaining the Stryker's signature mobility. As of February 2013, Stryker DVH variants had been in the fight for more than 20 months. These vehicles have been attacked more than

READY FOR THE FIGHT
The DVH provides Soldiers with a level of protection consistent with the Mine Resistant Ambush Protected vehicle while maintaining the Stryker's signature mobility. As of February 2013, Stryker DVH variants had been in the fight for more than 20 months. Here, Soldiers of the 2nd Squadron, 1st Cavalry Regiment, attached to the 1st Brigade Combat Team, 3rd Infantry Division (1/3 ID), Combined Task Force Raider navigate their Stryker vehicle through the Dab Pass near Forward Operating Base Apache in Zabul province, Afghanistan, Jan. 19. (Photo by SSG Christopher Blakeslee, 1/3 ID)

100 times, and so far no deaths have been directly attributed to a hull failure.

Improved survivability is just one of the advantages of the DVH design. DVH Strykers also boast a readiness rate that is currently above 95 percent. This means that DVH Strykers are survivable in the field and consistently ready to execute warfighter missions.

DVH EXCHANGE PROCESS

The Army has two full brigades of Stryker DVH vehicles and has determined that any future DVH construction probably would come from the exchange process, because it can provide the platform's increased survivability at a significantly lower production cost than for a new vehicle.

To begin the exchange process, the Army must determine which brigades will supply the FBH Strykers, Frutchey said. Then PM SBCT coordinates with the brigade commanders to designate which vehicles will be inducted into the exchange program. "The only stipulation is that the commanders must provide a complete vehicle; they can't strip them beforehand," Frutchey said. "A large portion of the savings in the exchange program stems from reusing the MEP, so if a brigade strips the vehicles for spare parts beforehand, then we won't realize any savings during the exchange process."

Vehicles inducted into the program are shipped to Anniston for disassembly. Once they arrive, technicians carefully inspect every aspect of the MEPs and common Stryker parts to determine what is suitable for reuse. The technicians then order the needed parts through the Army's Logistics Modernization Program. The new V-hull for the exchange vehicles is produced through the combined efforts of GD's facilities in London, Ontario, and Lima, OH. After the hulls are assembled, painted and lined, they are shrink-wrapped and shipped to Anniston for production. There, they go onto the assembly line and are put out together using a combination of new and refurbished parts, along with the MEPs from the FBH exchange vehicles.

Each completed exchange vehicle is shipped to its new unit, which trades it for an old FBH Stryker. That FBH Stryker is then shipped back to Anniston to be exchanged, and the process starts all over again.

Ultimately, the pilot program will enable the Army to make informed decisions on the benefits of further DVH exchange production, based on the effectiveness of the processes at Anniston and their

KEEPING THEM RELIABLE
The DVH exchange process includes reusing common parts and MEPs from existing FBHs, refurbishing them and reusing the parts in the new DVH structure. The Army is tracking exchanged Strykers by their serial numbers and will evaluate them over time to see if there are equipment failures and, if so, whether there are commonalities among the failures. Here, a Soldier performs maintenance on a Stryker June 5, 2012, at Fort Irwin, CA, in preparation for a two-week exercise leading up to deployment to Afghanistan. (Photo by SSG Antwaun Parrish, 5th Mobile Public Affairs Detachment)

associated costs, as well as the future need for vehicles.

RELIABILITY OF EXCHANGED VEHICLES

When the idea of the exchange vehicle program first arose, one of the big questions was whether the reliability of the exchanged vehicles would be comparable to that of new vehicles. The program has answered that question, according to Frutchey. "An exchanged DVH is as capable and reliable as a brand-new DVH," he said.

"In fact," he continued, "the Office of the Director, Operational Test & Evaluation concurs with this assessment and has agreed that no additional testing will be required for a DVH exchange vehicle above what is required for the standard production DVH."

That reliability comes down to experience, Frutchey added. "The exchange process is modeled after our battle damage repair process. We have extensive experience over the past 10 years in combining new hull sections and parts with existing MEPs. We have seen no difference between the reliability of the battle-damage-repaired Strykers and those that haven't been damaged. We expect the same results in this program."

However, to ensure that they prove this premise, PM SBCT says that exchanged Strykers will be tracked by their serial numbers and evaluated over time to see if there are equipment failures and, if so, whether there are commonalities among the failures. If this tracking process turns up a common deficiency among exchanged Strykers, that information will then be used to improve the repair and overhaul process.

CONCLUSION

The cost of an exchanged DVH was calculated at $620,000 less than a newly constructed DVH. For the 13 pilot Stryker DVH exchange vehicles, cost savings and schedule have been on target. The exact savings vary from vehicle to vehicle, based on the Stryker variant and how many parts need to be replaced.

"The Stryker exchange program is a prime example of how the Army can work with industry to find mutually beneficial solutions to common challenges faced in this austere fiscal environment," said Scott Davis, Program Executive Officer Ground Combat Systems. "Innovative partnerships between the Army and industry remain crucial as we move forward, looking for ways to modernize the Army's Stryker fleet to get the best vehicles in the hands of our Soldiers while trying to minimize costs to the taxpayer."

The largest portion of the savings for the exchanged vehicles comes from reusing the MEPS from the FBH vehicle. There are currently 10 Stryker variants in the fleet, each with a different MEP. Since some packages are more expensive than others, each Stryker will realize a different amount of savings. One thing is clear, however: Significant money will be saved on each vehicle.

*For more information on the Stryker DVH Exchange Program and other PEO GCS initiatives, follow PEO GCS on Facebook (**http://www.facebook.com/peogcs**) and Twitter (**http://www.twitter.com/peogcs**), or go to **www.peogcs.army.mil**.*

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Better Waveforms, Better Value

Joint Tactical Networking Center incorporates better buying power by promoting competition with software-defined waveforms

by MAJ William Brickner

In mid-November 2012, the training areas of Fort Huachuca, AZ, bustled with DOD, Army and Navy acquisition professionals participating in the third Joint Tactical Networking Center (JTNC) Wideband Networking Waveform Performance and Interoperability Quick-Look, or WIQ 3. An Interoperability Quick-Look is a cost-effective risk reduction event providing non-developmental item (NDI) vendors a unique opportunity to port and host Joint Tactical Radio System (JTRS) waveforms on their platforms and undergo evaluation for JTNC waveform compliance, in advance of upcoming field exercises.

These tests were part of the final two phases of a three-phased approach to testing radios using the Wideband Networking Waveform (WNW) application from the government's JTRS Information Repository. (See Figure 1.) Incorporating a number of focus areas in the DOD Better Buying Power 2.0 initiative, WIQ 3 enabled waveform developers to leverage existing assessment activities, reducing nonproductive processes to help control costs throughout the waveform's life cycle and promoting effective competition among multiple software-defined radio vendors to drive down procurement costs.

Designed to enable more cost-effective capability growth by applying the concept of competition to an acquisition strategy, JTNC's business model—the reuse of government-owned software by multiple vendors—represents a paradigm shift for defense communications. It moves away from sole-source, stovepiped, proprietary systems to a highly competitive, interoperable networking environment. As LTC Mathew Guerrieri, the product manager for joint tactical network waveforms, noted, "The WNW Quick-Look and demonstration during Network Integration Evaluation (NIE) 13.1 reinforced the value that our evolving business model delivers to the warfighter and taxpayer by promoting effective competition with four industry partner radio platforms operating in the same network."

"With government purpose rights software running on program-of-record and commercial software-defined radios throughout the battlespace, we all benefit from improved productivity and innovation in industry and government, ultimately leading to affordable programs," Guerrieri added. WIQ 3 "assisted the development team by identifying areas for improving the software and by updating the JTNC stakeholder community on this capability's status and ability to provide timely value."

FIGURE 1

PHASE 1: LAB
Evaluate Vendors' Porting of WNW...

- Transit Routing: Inject external routes representing external systems.
- Backup to WIN-T: Disconnect WIN-T link to show WNW takes over.
- Connect Subnets/Route & Retrans: Connect WNW BN net to CO SRW net using internal routing/retrans.
- SRW Gateway Fallover: Eliminate single point of failure for CO net exit point.
- Heal Fragmented SRW Subnet: Connect fragments of disconnected net.
- JENM: Plan, configure and monitor network health.
- Cross-Vendor Interoperability: Multiple vendors.

PHASE 2: OTA FIELD EVENT
Intergrate WNW with Army Network ...

- Tactical Applications: Support representative applications (e.g., large TCP transfers).
- Area of Operations: Support BN-wide operations.
- Transit Routing: Inject external routes representing external systems.
- Connect Subnet/Route & Retrans: Connect WNW BN net to CO SRW nets using internal routing/retrans.
- SRW Gateway Fallover: Eliminate single point of failure for CO net exit point.
- JENM: Monitor network health.
- Cross-Vendor Interoperability: Multiple vendors.

PHASE 3: WNW DEMONSTRATION AT NIE 13.1 DISTINGUISHED VISTOR DAYS
Demonstrate Capabilities ...

- Advantages of WNW as Mid-Tier Backbone: Highlight mid-tier networking capability.
- Tactical Applications: Support representative applications (video, chat, etc.).
- Area of Operations: Support BN-wide operations.
- Connect Subnets/Route & Retrans: Connect WNW BN net to CO SRW nets using internal route/retrans.
- JENM: Monitor network health.
- Cross-Vendor Interoperability: Multiple vendors.

BN – Battalion
CO – Company

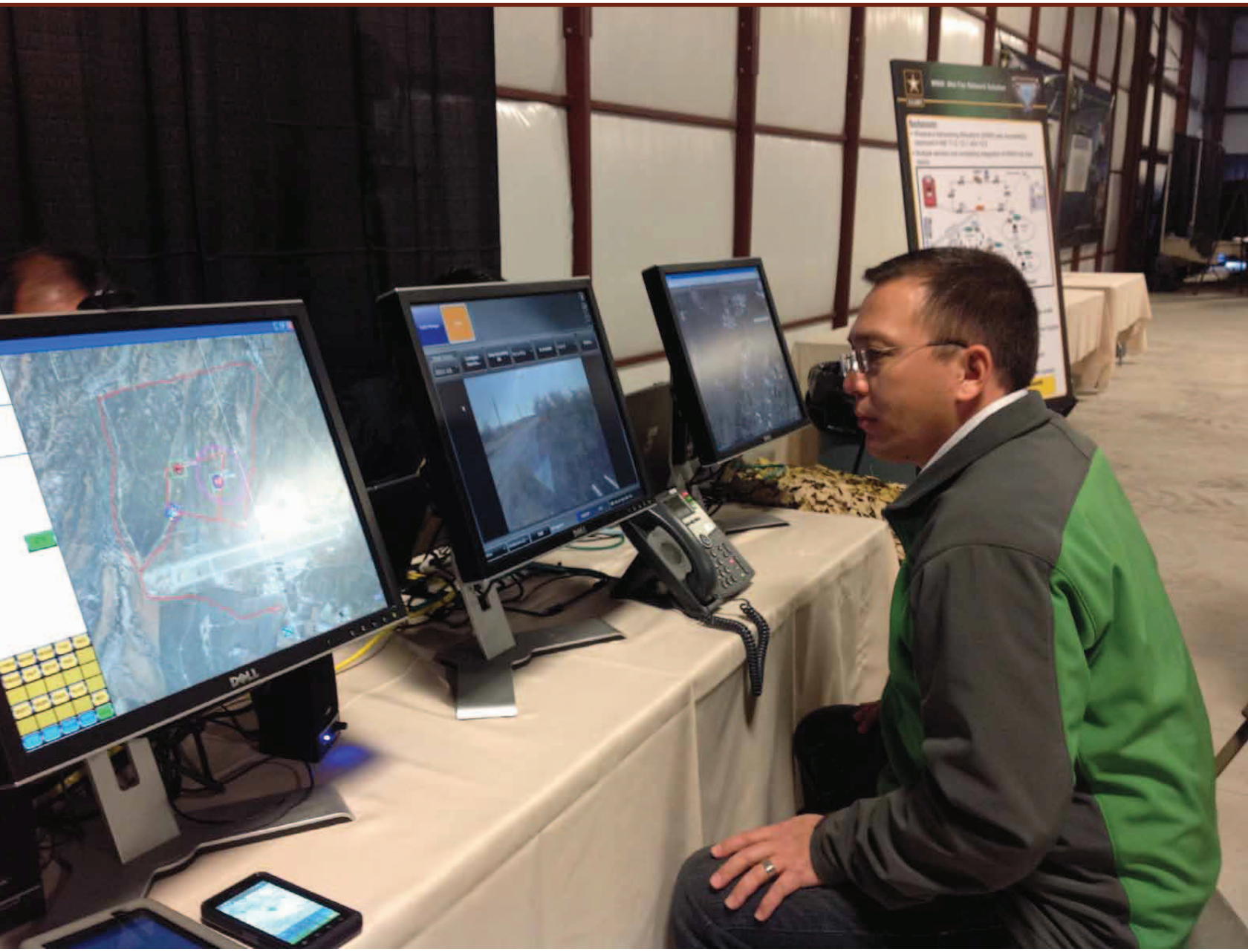
JENM - Joint Tactical Radio System Enterprise Network Manager

OTA – Over the air
SRW - Soldier Radio Waveform

TCP – Transmission Control Protocol

WNW - Wideband Networking Waveform

JTNC is taking a three-phased approach to testing radios using the WNW application from the government's JTRS Information Repository. The tests focus on a fully integrated and seamless tactical mobile communications system using SRW as the lower tier, WNW as the middle tier and Warfighter Information Network – Tactical (WIN-T) Net Centric Waveform as the upper tier. (SOURCE: JTNC)



GETTING THE BIG PICTURE
Michael Davenport, JRIL systems engineer, tracks communications during NIE 13.1 last fall at White Sands Missile Range, NM. The network transmitted voice, data and live video feeds, including text messaging from Soldiers on the ground at Fort Huachuca, AZ. (Photo courtesy of JTNC)

PROMOTING INCENTIVE, PRODUCTIVITY AND INNOVATION

The first phase of testing, conducted in September 2012 at the Space and Naval Warfare Systems Center Atlantic facilities in Charleston, SC, was a laboratory-based simulation to evaluate performance and interoperability. The second phase was conducted at the U.S. Army Electronic Proving Ground (EPG), Fort Huachuca, AZ, with vendors providing radios for integration into a variety of vehicles and field evaluations of the WNW mid-tier networking capabilities. Phase 3 culminated with a two-day, over-the-air demonstration connecting communication nodes via a satellite link from EPG to White Sands Missile Range, NM. That test coincided with the NIE 13.1 Distinguished Visitors Day demonstrations and marked the completion of the assessment of WNW's capability as a deployable mid-tier network.

This particular WIQ was planned, coordinated and executed by the Joint

Reference Implementation Laboratory (JRIL) test team in support of JTNC's project manager for joint tactical networks (PM JTN).

ENABLING COMPETITION

Participation in the WIQ 3 provided several benefits for software-defined radio vendors. They had the opportunity to baseline the WNW hosted on their platforms and to provide a cost-effective risk reduction exercise linked to subsequent field events. The WIQ 3 also provided them with the chance to evaluate waveform application compliance and performance hosted on a radio platform in accordance with the WNW configuration package defined by the JRIL.

WIQ 3 also provided NDI industry vendors an opportunity in a field environment to participate in a simulated, battalion-size network architecture, demonstrating to DOD leadership and service acquisition planners the advantages WNW offers as a mid-tier networking waveform application in a stressed environment. The simulated network architecture was representative of the Army's objective network architecture, while units at NIE 13.1 focused on the currently fielded bridge network architecture known as Capability Set 13/14.

WIQ 3 successfully demonstrated that WNW is capable of transmitting, distributing and receiving live video, data and voice over Internet Protocol packets from a tactical application while providing network "healing" (autonomous reforming) relief from a fragmented Soldier Radio Waveform (SRW) company subnetwork. WNW further demonstrated rerouting capabilities when an upper-tier access point was removed, forcing information from the battalion and company networks to direct to another upper-tier access point through the WNW network. The use of multiple platforms in a single WNW network further demonstrates the JTNC business model.

REDUCING NONPRODUCTIVE PROCESSES

WIQ 3 also provided an excellent opportunity to demonstrate the mid-tier networking capabilities of WNW in a realistic environment, using architectures that meet current and future operational needs of Joint forces. During the WNW demonstration, distinguished visitors at a simulated battalion tactical operations center at White Sands were able to talk to and see nodes moving around the "battlespace" at EPG. In one scenario, the visitors viewed a live video feed from the fictional "Alpha Company" commander's vehicle while simultaneously receiving real-time situation reports from an engagement with suspected insurgents. Future test events will continue to serve as a forum to demonstrate new capabilities and assess the viability of WNW to meet the emerging needs of the warfighter.

"The continued use of the SRW and WNW Performance and Interoperability Quick-Look events based on the JTNC business model generates waveform software reuse to increase competition and interoperability while reducing total cost of ownership for defense communication networks," said Brett Bendt, WNW RIL's principal test engineer for WIQ 3.

COMMUNITY OF EFFORT
Dr. Richard North, JRIL director, describes how to achieve the battalion objective architecture, using a battalion WNW backbone, to a stakeholder during NIE 13.1 at White Sands Missile Range. (Photo courtesy of JTNC)

OPERATIONAL REALISM
A vehicle-mounted radio runs WNW as a mid-tier backbone network during a recent field test at EPG to demonstrate its utility in highly mobile environments with significant terrain impediments. (Photo by Barkley Galloway)

"In short, through events like these, the government can assess vendors' progress in porting JTNC waveforms, while also learning how to make the waveforms more dependable and portable," he said.

During WIQ 3, the team examined the ways in which NDI vendors were able to handle more advanced WNW functionalities in a multi-platform, networked field environment. Bendt added, "WIQ 3 provided the PM JTN with extremely valuable risk and cost reduction data through integrated testing. The event also demonstrated that WNW is a viable option for the Army's mid-tier backbone network."

CONCLUSION

Despite what the name suggests, WIQ 3 is not just a quick look but rather the first step in reviewing the performance, agility, security, cost and interoperability of software-defined radios operating JTN waveform products for eventual deployment with warfighters. JTNC will continue to execute interoperability quick-looks on all government-owned waveforms; the scope of testing will evolve to meet the changing requirements of the operational community.

(Author's Note: The Department of the Navy selected Bendt to receive its 2012 Test and Evaluation Small Program Outstanding Tester Award for his efforts during the WIQ 3.)

For more information, go to ***www.jtnc.mil.***

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MORE CAPABILITY for Less

PEO C3T finds efficiencies as it continues to upgrade Blue Force Tracking

by LTC B.J. Stephens and MAJ John Balabanick

On the battlefield, situational awareness capabilities help reduce the uncertainty known as the "fog of war" by locating and tracking friendly and enemy forces. Now, the project manager for Joint Battle Command – Platform (PM JBC-P) is enhancing those capabilities by fielding upgrades to the Army's friendly force tracking system, Force XXI Battle Command Brigade and Below/Blue Force Tracking (FBCB2/BFT). Known as Joint Capabilities Release (JCR), the new technology allows for the implementation of a faster satellite network, Type 1 secure data encryption and upgraded logistics capabilities.

Also, PM JBC-P has implemented a larger satellite coverage area with a shift of satellite channels to provide direct communication with the systems and increase the flow of information, greatly enhancing flexibility in operational and training environments while also saving money.

In today's fiscally constrained climate, PM JBC-P thus is not only delivering a better product to Soldiers on the battlefield, but also realizing efficiencies with streamlined services and reduced costs. The consolidation of services translates to a cost avoidance of more than $207.6 million for the Army through at least FY16.

A TWO-PART UPGRADE

JCR is the first step in a two-part upgrade of capability that is critical to the Army's tactical communications network, on which Soldiers rely for situational awareness as well as command and control. The system includes computers, global positioning equipment and communication capabilities that combine to provide near-real-time information to combat leaders at the tactical level. Soldiers inside vehicles can plot and track the location of enemy and friendly forces and relevant objects, while exchanging messages.

Among the many upgrades JCR brings to the original FBCB2 are the capabilities gained through the integration of the Movement Tracking System (MTS) into the JBC-P family of systems. The MTS system comes in a vehicle-mounted or dismounted control station configuration that tracks logistics formations. It includes a radio frequency identification capability to provide in-transit, near-real-time monitoring of critical cargo.

Two critical acquisition decision memorandums laid the foundation for bringing the two systems of like technologies together. In 2006, the Army directed the use of the FBCB2 product line software to replace MTS software. Then in 2010,

EYE ON THE PRIZE
The JCR of FBCB2/BFT, and the follow-on JBC-P, provide key upgrades to the widely fielded FBCB2/BFT, allowing Soldiers in vehicles, aircraft and command posts to track friendly and enemy forces and exchange messages. Here, a Soldier from 2nd Brigade Combat Team, 1st Armored Division uses the JCR Nov. 9, 2012, at White Sands Missile Range, NM, during Network Integration Evaluation (NIE) 13.1. (U.S. Army photo by Claire Heininger)

a memorandum directed the transfer of MTS from PEO Enterprise Information Systems to PM JBC-P under Program Executive Office Command, Control and Communications – Tactical (PEO C3T), effective Oct. 2, 2011.

These two directives aimed to eliminate the need for separate program management, contracts, satellite channels, operational elements and sustainment tails, as these effectively duplicated costs. Although not specified, the directives also had the net result of greatly improving capabilities and interoperability provided to MTS and FBCB2 users.

This major transition now allows JCR-equipped systems to communicate with and track maneuver and logistics platforms and cargo together in near-real time, enabling the safe and timely completion of distribution missions in support of full-spectrum operations. Installation of JCR has been completed in more than 50 percent of the logistics supporting platforms in Afghanistan that are scheduled to receive the upgrade.

What the Soldiers on the ground don't see is the change at the back end. Previously, MTS used a separate network and different protocols that prevented the sharing of information. In Afghanistan, FBCB2 platforms could get information on where support vehicles were, but the cargo support vehicles couldn't get that information about their maneuver counterparts. The solution: Move to one shared JCR network.

Traditionally, significant capability upgrades also result in higher costs. But the transition of MTS into PM JBC-P offered a way to reduce spending, streamline processes and better align resources. In FY12, the transition showed an immediate cost avoidance of almost $20 million; that figure is expected to exceed $30 million per year through at least FY16.

Although originally MTS and JCR had separate software and hardware, they shared the same networking technology. So, in terms of the BFT network, the two systems were compatible. After the 2006 memo, the two project managers chose common computing hardware in an MTS hardware refresh. With the same network and hardware, they set the stage

to complete efficient integration using the FBCB2 product line software.

SYNCHRONIZING EFFORTS

The transition of the MTS program office into PM JBC-P created an opportunity not only for increased capabilities, but also for new efficiencies in product support, fielding operations, sustainment and more.

Consolidating field service representatives (FSRs) and fielding operations significantly cut costs while improving FSR performance and support. Based on the allocation of systems, PM JBC-P has generally provided a dedicated FSR who trains and deploys with the brigade combat team. Depending on the mission, more than one may be assigned. MTS FSRs were regionally based in both operational and training environments, supporting all formations. With the consolidation, FSRs were retrained on both systems and aligned to the brigade.

While the reorganization reduced the total number of FSRs, it has increased support by aligning dedicated FSRs to the sustainment brigades, all of which now train and deploy with their units. Additionally, the JBC-P fielding team has expanded its mission and now installs the systems identified in the MTS Basis of Issue Plan. Between these two alignments, the Army is avoiding costs of more than $12 million per year compared with continued separate operations. At the same time, units benefit from a unified support element and fielding effort.

Furthermore, eliminating software test and support for an evolving MTS baseline allowed test, support and sustainment functions to be consolidated into one process. This will eliminate almost $1.7 million in additional costs per year. For units, this single baseline results in one software platform, allowing users to migrate between systems without the burden of retraining.

ENABLING DECISIVE ACTION
Among the many upgrades JCR brings to the original FBCB2 are the capabilities from integrating the Movement Tracking System (MTS) into the JBC-P family of systems. Here, CPL Jordan Ruenyandurr from Field Artillery Squadron, 2nd Cavalry Regiment monitors the MTS Oct. 13, 2012, during the training exercise Saber Junction 2012, at the Vilseck Training Area in Germany. (U.S. Army photo by SPC Evangelia Grigiss, 55th Combat Camera)

PM JBC-P also eliminated one fully manned, 24/7 network operations center and its contingency backup, which was manned only when needed. Their functions were consolidated into the two existing JBC-P operational sites that run 24/7. The streamlining of services will eventually avoid more than $1 million in costs per year, and because both new operation centers are manned 24/7, the system will receive the benefit increased readiness.

SATELLITE SAVINGS

Further cost savings were realized through a new PM JBC-P initiative that takes advantage of available commercial satellite technology by working with its provider to configure and shape beams for larger coverage areas. This will not only help keep military members safe in the field, but will also mean about $56 million in cost avoidance over the next four years, based on current operational plans and contractor support.

The impact is felt throughout DOD, because multiple combatant commands use the satellite channels to support operational and training missions.

Before this effort, changing satellite coverage usually required a deliberate, tightly managed and lengthy over-the-air provisioning process to move between operational or training areas. This sometimes resulted in missed deployment timelines. If not available to be provisioned over the air, the implementation process required a manual touch by the FSRs for each system. Depending upon the type of brigade, as many as 400 to 800 systems would require FSRs to connect them directly to the network.

With the increased capability of the newly shaped satellite beam, units can move seamlessly between areas previously covered by multiple satellite channels, as well as into areas previously not covered. Currently this program covers areas of Europe, the Middle East, and Africa, with PM JBC-P looking to apply this model wherever possible.

CONCLUSION

The streamlined approach and changes implemented by PM JBC-P, based largely on simple market analysis and Soldier feedback acquired during training and user juries, were only a start. JCR is the first step of a two-pronged upgrade of FBCB2/BFT. In development is JBC-P, which offers a new user interface and intuitive features such as touch-to-zoom maps and drag-and-drop icons. The software for the advanced JBC-P technology was developed by the Software Engineering Directorate, U. S. Army Aviation and Missile Research, Development and Engineering Center, Redstone Arsenal, AL, under the U.S. Army Research, Development and Engineering Command.

Also, JBC-P will integrate the functionality of Tactical Ground Reporting (TIGR), a breakthrough multimedia reporting system for troops on patrol that recently transitioned from the Defense Advanced Research Projects Agency to Army management, resulting in additional efficiencies. TIGR allows small-unit Soldiers to digitally capture, report and retrieve patrol data. Those data could include common incidents, as well as information on residents and leaders of a village that could be useful to Soldiers on patrol. The Web-based TIGR empowers Soldiers to collect, share and analyze information using a Google Earth-like interface, pictures and text.

Although the MTS transition has obvious fiscal benefits for the Army, the big benefit goes to the Soldier, in the form of a consolidated, more efficient effort resulting in better service and capability. PM JBC-P will continue to advance state-of-the-art situational awareness technology to further reduce the fog of war, while embracing the challenges of equipping the Army of the future in a constrained fiscal environment.

For more information, go to ***http://peoc3t.army.mil/c3t/****. DOD employees can find additional information, including the JBC-P testing collaboration discussion group, on milBook at* ***http://go.usa.gov/4QdH*** *(Common Access Card login required).*

A FASTER NETWORK
The JCR of FBCB2/BFT allows for the implementation of a faster satellite network, Type 1 secure data encryption, and upgraded logistics capabilities. Here, a Soldier dismounts from a Warfighter Information Network – Tactical Increment 2 Point of Presence vehicle during NIE 13.1. (U.S. Army photo by Amy Walker)

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LOOKING AHEAD *with* JLTV

Army sets sights on latest networking technologies with next-generation tactical vehicle

by Mr. Kris Osborn

HARNESSING COMPETITION
The Army awarded three contracts for the EMD phase of the JLTV, worth $55 million to $65 million each, to develop and test competing versions of the next-generation vehicle. The resulting vehicle will be designed with an unprecedented blend of survivability, performance and payload. The goal at the end of the EMD phase will be to down-select to a single vendor and move into LRIP by 2015.
(Photos courtesy of JPO JLTV)

The U.S. Army-led Joint Light Tactical Vehicle (JLTV) program is moving forward with testing and preparation for a Limited User Test, Capabilities Production Document, and Milestone C procurement decision in FY 15.

Now in its 33-month engineering and manufacturing development (EMD) phase, "The JLTV incorporates a whole new generation of automotive technology," said COL(P) David G. Bassett, deputy program executive officer for combat support and combat service support.

Engineering a new vehicle that can accommodate the latest networking technologies and electronics is a key part of the EMD effort. The intent is to maximize interoperability across the force, linking vehicle platforms and dismounted units while also ensuring that the technical infrastructure can accept computing and technological advances as they mature. The JLTV program aligns with the Army's capability set management approach, synchronizing a host of networking and computing technologies into an interoperable "suite" of capabilities including radios, satellite communication (SATCOM) networks, digital display screens and onboard electronics.

REQUIREMENTS TRADE-OFFS

JLTV program officials worked with engineers, requirements experts with the U.S. Army Training and Doctrine Command, and industry partners during the earlier technology development (TD) phase to identify and, in some cases, trade off less crucial requirements and thereby lower the target average unit manufacturing cost to $250,000 while still developing leap-ahead capability.

These cost-informed trades, along with the integration of mature technologies, allowed the JLTV program to shorten the EMD phase from 48 to 33 months, program officials said.

"The JLTV program capitalized on the benefits of competitive prototyping during the TD phase, where the efforts of multiple vendors substantially improved the fidelity of the designs and increased confidence in operational performance," said Robert Schumitz, deputy project manager.

AUTOMOTIVE ADVANCES

The JLTV represents the next generation of military vehicle technology in a number of key respects. The light tactical vehicle comes standard with substantial protective ability to defend against IEDs, roadside bombs and other threats, Bassett explained.

"The vehicle is designed from the ground up to be mobile and get you to the fight with a level of underbody protection equivalent to the original M-ATV [Mine Resistant Ambush Protected All-Terrain Vehicle] vehicle standards. Also, the vehicle is being designed with modular armor, so that when the armor is not needed, we can take it off and bring the weight of the vehicle down to drive down the operating costs," Bassett said.

The JLTV will provide protection comparable to that of the 25,000-pound M-ATV, but at a curb weight of 14,000 pounds, thus combining the mobility and transportability of a light vehicle with MRAP-level protection.

"I remember transitioning from the jeep to the HMMWV [High Mobility Multipurpose Wheeled Vehicle] as a young enlisted Soldier, because our needs had changed," said JLTV Joint Project Manager COL John R. Cavedo Jr. "Now, warfare and our Soldiers' needs have changed again. By the time we put extra armor on the HMMWV to meet today's threats, there wasn't any payload capacity left. And, while the MRAP had the armor and some payload, it wasn't well-equipped to maneuver. The intent with JLTV is to have a vehicle with MRAP-level armor in some places, but also still with payload and maneuverability."

When compared with earlier light tactical vehicles such as the HMMWV, the JLTV is being engineered with a much stronger, 250- to 360-horsepower engine, and a 570-amp alternator able to generate up to 10 kilowatts of exportable power. In fact, because of the increased need for onboard power, the JLTV testing during the EMD phase will include integration of a suite of command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) kits and networking technologies, Bassett said.

THREE VENDORS' CONCEPTS
These are the three versions of the JLTV arising from the EMD contracts awarded to (from top): AM General LLC, Lockheed Martin Corp., and Oshkosh Defense. The vehicles are still in the EMD phase and so may not precisely represent the JLTV that the Army and Marine Corps ultimately procure. (Photos courtesy of JPO JLTV)

"We expect to see a 10 to 15 percent improvement in fuel economy just by going to a modern fuel-injected, digitally controlled engine and have a curb weight that still meets Army and Marine Corps mobility requirements," he explained. "The JLTV will be designed with enough onboard power to support the Army's future network and be able to take advantage of the latest generation of diesel engine technology to maximize fuel economy."

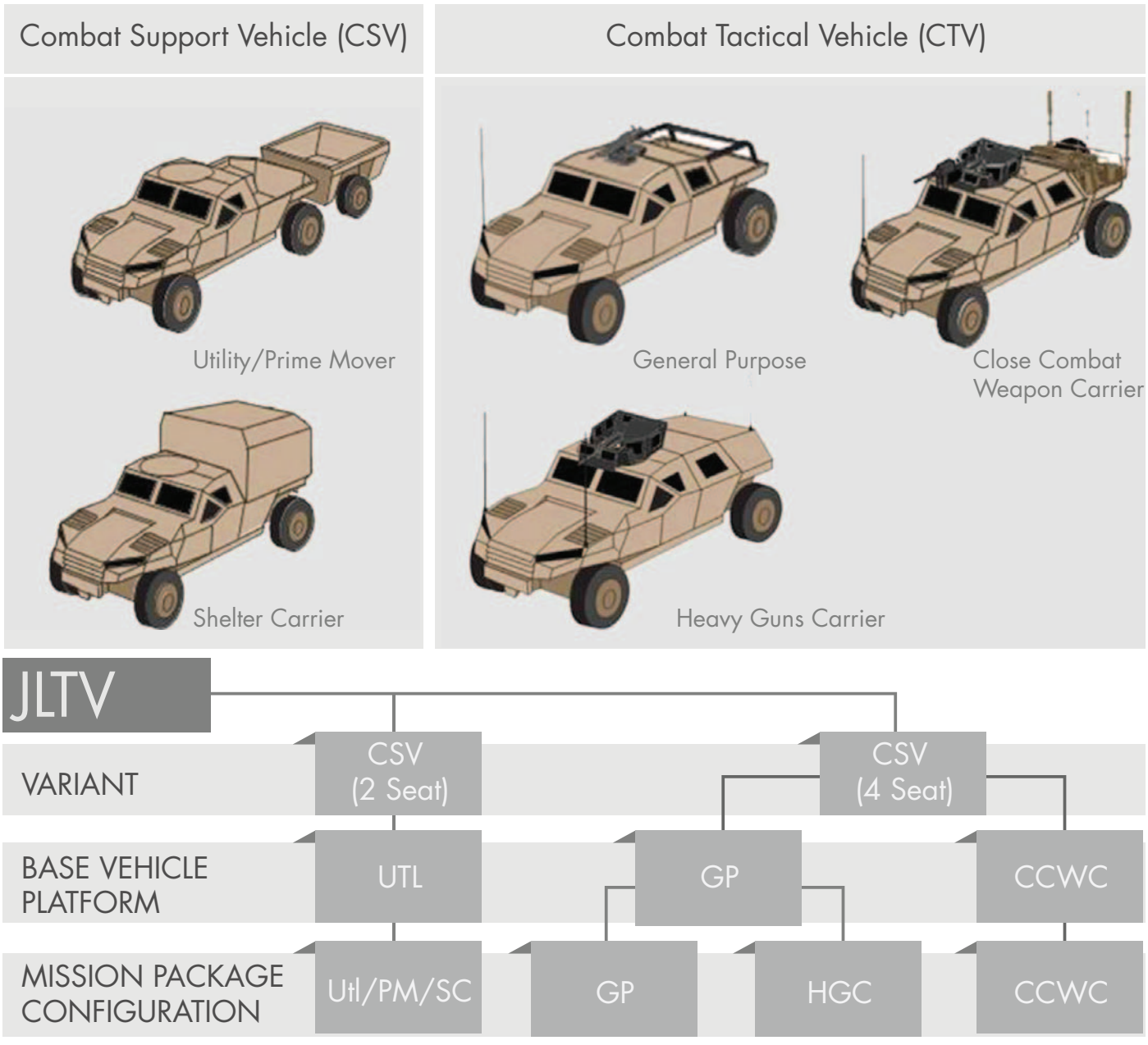
NETWORKING THE JLTV

In fact, like other vehicles in the Army's inventory, the JLTV is being aligned with a suite of networking capabilities called Capability Set 13/14, integrated systems such as radios, computers, SATCOM networks and digital display screens to allow for improved communications, mission command activities and situational awareness while in transit.

The in-vehicle network approach is grounded in "open architecture," meaning that information technology systems and electronics will be built to commercial technical standards ensuring maximum interoperability. JLTV is aligning with the new VICTORY architecture standards, which will enable a single computer or system to run a host of interoperable applications and functions. VICTORY stands for "vehicular integration for C4ISR/electronic warfare interoperability."

With the JLTV information architecture, the vehicle will be able to streamline and more easily exchange and transmit information, while accommodating the maximum possible number of programs and applications on any given computer or display screen. This kind of architecture improves the functionality and interoperability of a variety of key capabilities including messaging, chat and digital map displays showing battle-relevant force positions.

FIGURE 1



The JLTV is being built as a single truck in a four-door platform called the Combat Tactical Vehicle and a two-door platform called a Combat Support Vehicle. The two-door CSV platform will have utility and shelter-carrier variants. (SOURCE: U.S. Army)

THE LIGHT TACTICAL VEHICLE COMES STANDARD WITH SUBSTANTIAL PROTECTIVE ABILITY TO DEFEND AGAINST IEDS, ROADSIDE BOMBS AND OTHER THREATS.

EMD TIMETABLE

During the first part of the EMD phase, industry vendors are refining their designs while the government begins its comprehensive testing. Already, the Joint Program Office (JPO) has completed armor coupon (sample materials) testing and is receiving rolling chassis for blast testing.

After three months of contractor testing, each vendor will deliver 22 vehicles and associated trailers to the government in August 2013. A series of formal government tests will follow in key areas such as ballistic and blast protection, reliability and performance, corrosion, and mobility and transportability, Bassett explained.

Planned EMD includes assessments of the "rated cone index," an engineering metric designed to determine vehicle mobility in soft soil, Bassett said.

"We're testing an enormous percentage of the requirements during the EMD phase and in other cases confirming them through analysis, so that by the time we get to the milestone, we are evaluating the best truck to go into production," he explained.

Because affordability remains a large part of the calculus for the JLTV program, the JPO JLTV encourages competition among vendors. A competitive procurement model has helped the program mature thus far and continues to inform the EMD, Bassett said.

The JLTV is being built as a single truck in two primary configurations: a four-door platform, the Combat Tactical Vehicle; and the two-door Combat Support Vehicle. (See Figure 1 on Page 43.) The four-door platform will include Heavy Gun Carrier and Close Combat Weapons Carrier variants able to carry weapons such as a .50-caliber machine gun or TOW missile and conduct mounted patrols and convoy escort missions. The Combat Tactical Vehicle will be able to carry 3,500 pounds of payload.

The two-door Combat Support Vehicle platform will have utility and shelter-carrier variants, engineered in some cases to tow a 105 mm Howitzer or EQ-36 radar system. The two-door utility variant is being built to accommodate as much as 5,100 pounds of payload, Bassett said.

All of the JLTVs will be configured with variable ride-height suspension, the capability to raise and lower the suspension to meet certain mission requirements, such as raising it in high-threat areas and lowering it to transport the vehicles on Maritime Prepositioning Force ships. Also, the JLTV will be suitable for sling-loading beneath a CH-47 Chinook helicopter under standard conditions, Bassett said.

CONCLUSION

The goal at the end of the EMD phase will be to down-select to a single vendor and move into low-rate initial production (LRIP) by 2015, Bassett said. The Army-Marine Corps plan calls for three years of LRIP, to be followed by five years of full-rate production, resulting in an incremental delivery of the vehicle. The Army plans to acquire roughly 50,000 JLTVs; the Marine Corps, about 5,500.

In his recent "Waypoint #1" guidance, Army Chief of Staff GEN Raymond T. Odierno said that the Army's network "provides the overarching architecture connecting Soldiers and their equipment with the data vital to creating overwhelming synergy." He went on to note, "Our combat and tactical wheeled vehicle fleets are being developed to network this more capable squad and provide detailed information from multiple sources. Furthermore, our future vehicle fleets will provide increased lethality and mobility, while optimizing survivability through the use of incremental options scaled to mission requirements."

JLTV is a key part of that vehicle effort, designed to be fielded with a ready digital backbone and sufficient onboard power to support the 21st-century Joint warfighter's needs.

For more information, go to ***http://www.peocscss.army.mil/****.*

MR. KRIS OSBORN served until recently as a highly qualified expert for the Assistant Secretary of the Army for Acquisition, Logistics and Technology Office of Strategic Communications. He is now a staff correspondent for Military.com. He holds a B.A. in English and political science from Kenyon College and an M.A. in comparative literature from Columbia University.

PEO Ground Combat Systems

Shaping the Future Through Affordable Modernization of Ground Combat Systems

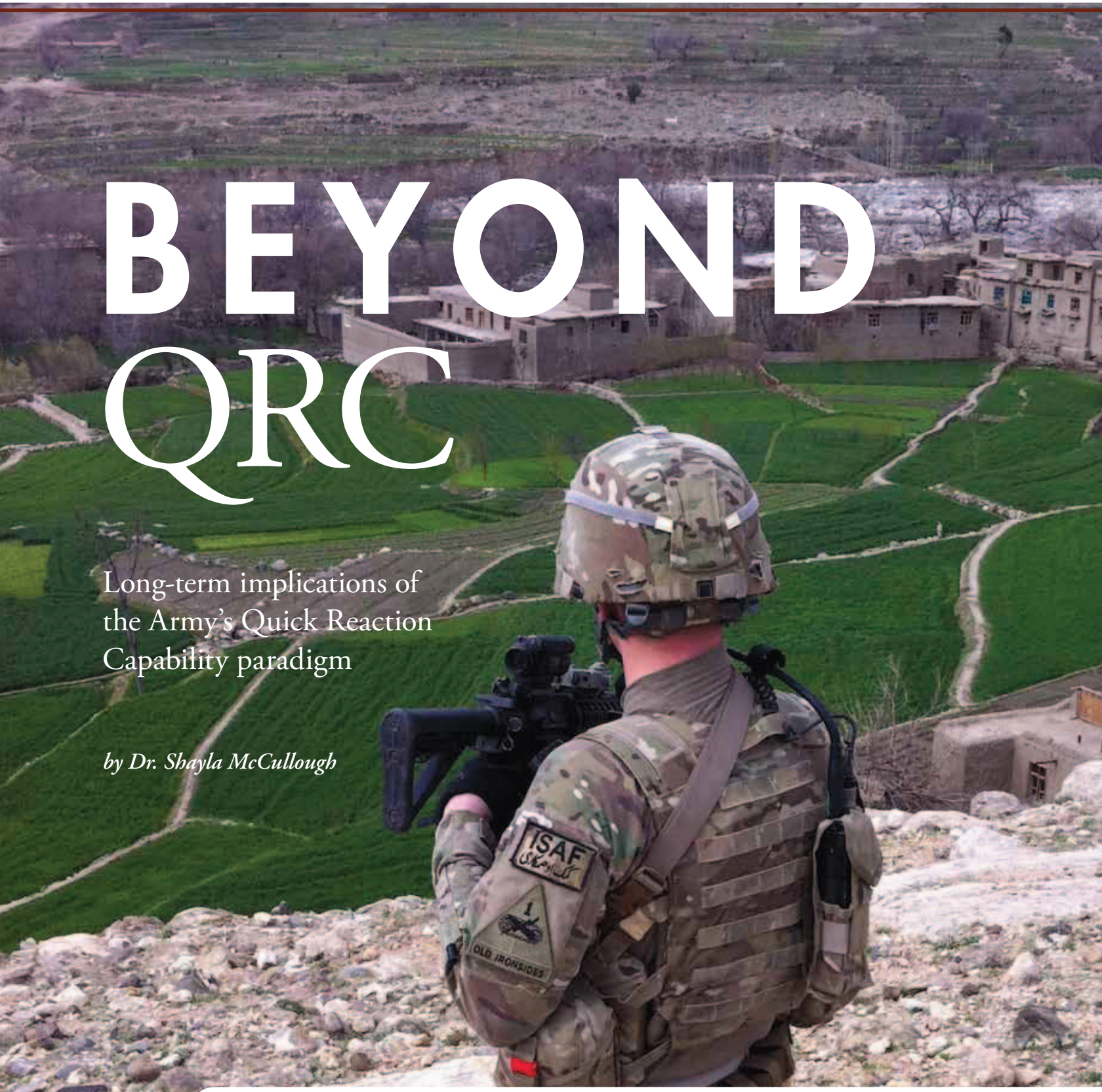
In alignment with the Army's Combat Vehicle Modernization Strategy PEO GCS is working to:

1. **Transform** capabilities by acquiring the Ground Combat Vehicle, robotics and unmanned ground systems
2. **Replace** the M113 FoV to increase force protection, mobility and network capabilities
3. **Improve** the Abrams tank, Stryker FoV, and Bradley FoV to increase space, weight and power, and enable integration of the emerging network.

BEYOND QRC

Long-term implications of the Army's Quick Reaction Capability paradigm

by Dr. Shayla McCullough



COUNTER-IED MISSION
Getting counter-IED capabilities to theater fast was one of the first uses of the QRC paradigm. Here, a scout with 1st Squadron, 13th Cavalry Regiment stands watch May 4, 2012, over a village during a mission in Laghman province, Afghanistan, to detect and defeat IEDs. (U.S. Army photo courtesy of 7th Mobile Public Affairs Detachment (MPAD))

On a quiet road winding past the walls of a forward operating base north of Baghdad, would-be terrorist pours kerosene into a puddle on the blacktop in the dark of night and walks away. Over the next day, as the temperature tops 130 degrees, the kerosene will soften the spot. On the next night, someone returns to dig away the chunky, tar-covered gravel and place an improvised explosive device (IED). In just a few minutes, the hole is refilled and some sand thrown on for concealment. All that remains to be done is to wait for the next Coalition convoy hauling supplies or an unsuspecting patrol to roll out.

Not long ago, similar scenarios played out over and over, causing injury and death. However, while terrorists continue to attack using simple, line-of-sight technologies such as garage door openers hardwired to explosives, U.S. forces are achieving more advanced technical solutions to move the warfighter out of harm's way, because scenarios such as these led to the Army's current Quick Reaction Capability (QRC) paradigm and associated process.

A MAJOR SHIFT

Before the wars in Iraq and Afghanistan, the Army Acquisition Community procured, fielded and sustained systems by following a detailed, at times lengthy process. While this process proved helpful and still is used today to fill specific types of system requirements, its lengthy cycle times were unsuitable for the increased operations tempo of the current fight. The QRC paradigm emerged as an alternative, its primary tenet being speed of procurement. The QRC became a streamlined version of the traditional acquisition processes, with the goal to purchase and field systems rapidly. Time has become the driving force in QRC programs, and the execution of non-QRC acquisitions is also now compressed. However, in the process of executing QRC programs, the long-term implications of the QRC were pushed to the periphery, and understandably so.

Because of its short history, the QRC paradigm has yet to be fully explored. In fact, there is little systematic theoretical or empirical research on the dynamics of the QRC paradigm as it exists today—or, more important, its long-term implications. This paucity of information most likely stems from several factors, including the rapid evolution of the QRC paradigm; a lack of agreement on the definition of a QRC; and, perhaps most important, disagreement on whether a QRC should represent a short- or long-term solution.

To better understand the process commonly understood as QRC, the author conducted a research study to examine its conceptual structure. The research examined the application of the rapid acquisition policy and its impact on acquisition workforce professionals. The primary goal was to explore and determine how, and to what extent, QRC programs were executed differently than non-QRCs. For example, decision-makers are now more amenable to "out-of-the-box" thinking, approving nonconventional actions more frequently to satisfy warfighter requirements.

Moreover, the research sought answers to a larger question: How might the QRC paradigm influence future Army acquisition policy?

Even with the drawdown of U.S. forces from Iraq and Afghanistan, answers to these questions will become increasingly relevant as the Army seeks to effectively navigate financial constraints while maintaining combat overmatch.

THE RESEARCH APPROACH

The author adopted a case-study approach with the goal of synthesizing the day-to-day experiences of key QRC personnel into an initial understanding of the QRC process, and ultimately developing recommendations for areas worthy of change within the Army's QRC approach.

The following overarching research questions focused on the long-term implications of the existing QRC paradigm and whether it is capable of satisfying long-term Army acquisition requirements:

1. Are QRC programs executed differently than non-QRC programs?
2. What are the logistics and sustainment implications of QRC programs?
3. By extension, are there additional sustainment processes of QRC programs that are unique to QRCs? If so, how do they differ from those characteristic of non-QRC programs?

Data were collected via interviews with a sample of 13 participants from the Army Acquisition Community who work directly with QRC programs.

FINDINGS AND RECOMMENDATIONS

Analyses conducted for the study uncovered a few key, specific areas ripe for further study and change, including a formalized lessons-learned process; a change in Army acquisition policy; formalized QRC training so that workforce members derive most of their knowledge from institutional practices and protocols, as opposed to just real-time experience and informal guidance; and a revised plan for executing acquisition requirements in accordance with policy.

The first recommendation for action is to develop a lessons-learned forum in which

BRIDGING LANGUAGE BARRIERS
The Machine Foreign Language Translation Systems QRC met an immediate need for Soldiers to communicate with Afghans, rather than wait while a program of record could be developed. Here, SGT Jason Finamore of 1st Squadron, 33rd Cavalry Regiment, 3rd Brigade, 101st Airborne Division (Air Assault) hands out candy Feb. 12 to Afghan children in Paktika province, Afghanistan. (U.S. Army photo by SPC Alex Kirk Amen, 115th MPAD)

to discuss revisions in policy on how QRC programs are executed. This action would be separate from the recently created site sponsored by the Army Materiel Systems Analysis Activity (see "A Hub for Lessons Learned," Army AL&T magazine, July-September 2012, at **http://armyalt.va.newsmemory.com/**).

The forum would focus on policy development activities and processes. The intended objectives would be to amend existing policy based on lessons learned during the various QRC processes. The lack of such an official lessons-learned process was a common theme among the acquisition workforce professionals who participated in the study. This forum should represent acquisition workforce professionals at each working level, including the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)), U.S. Army Materiel Command (AMC), program executive offices, the life-cycle management commands (LCMCs) and program managers, among others.

A collaborative forum of this kind would provide a structured approach to capturing, analyzing and applying lessons learned, with emphasis on how to leverage them to improve acquisition policies in an informed, comprehensive manner. The result could be a new policy that thoughtfully sets forth parameters for a more streamlined approach to the acquisition process.

It became apparent during the study that the manner in which QRCs are actually executed did not necessarily align with existing acquisition policies. The mere existence of the QRC paradigm and process was not intended to suggest abolishment of existing acquisition policies. The research found a gap in existing Army policy that fails to address the

UNMANNED UPGRADE
With the Gray Eagle QRC, the Army provided an upgrade in unmanned aircraft technology to benefit Soldiers on the battlefield. The QRC preserved the milestones, checks, balances and procedures central to a formal program of record procurement. Here, two Gray Eagle unmanned aerial vehicles newly assembled by 2nd Battalion, 27th Infantry Regiment await missions April 12, 2012, at Forward Operating Base Shank in Logar province, Afghanistan. (U.S. Army photo by SGT Ken Scar, 7th MPAD)

QRC process in its entirety, including, for example, the process for execution across ASA(ALT) and the AMC. The policy should accurately and comprehensively capture the main functional areas and the relationships between the program managers (PMs)—the life-cycle managers of a system—and the LCMCs, as well as how funding moves between the organizations. There is a need for acquisition policymakers to influence the development of acquisition policy so that it clearly defines and articulates the steps relating to QRCs.

The findings also demonstrate a need to formalize QRC training across the acquisition community. Acquisition professionals learn how to execute a QRC primarily through informal training and word of mouth from their internal networks, as opposed to formalized, policy-based training. At a minimum, PMs should consider developing and conducting training in their organizations to enable acquisition professionals to do their jobs well and under less stressful conditions. Organizations, such as the Defense Acquisition University, that provide professional education may be another avenue for developing and implementing such training.

Finally, the results of this study demonstrate a need to revisit the process by which the acquisition community executed Army requirements before the QRC paradigm. This could entail developing a working group to analyze the acquisition process before the year 2000, in conjunction with lessons learned from the current QRC paradigm. A "hybrid" policy could emerge that would enable more flexibility within the acquisition process, albeit within a larger, structured approach.

CONCLUSION

This topic is ripe for further exploration. For example, the Army requirements and funding processes, which are inextricably bound up in the QRC paradigm, also warrant further exploration for potential change, particularly in light of current financial constraints.

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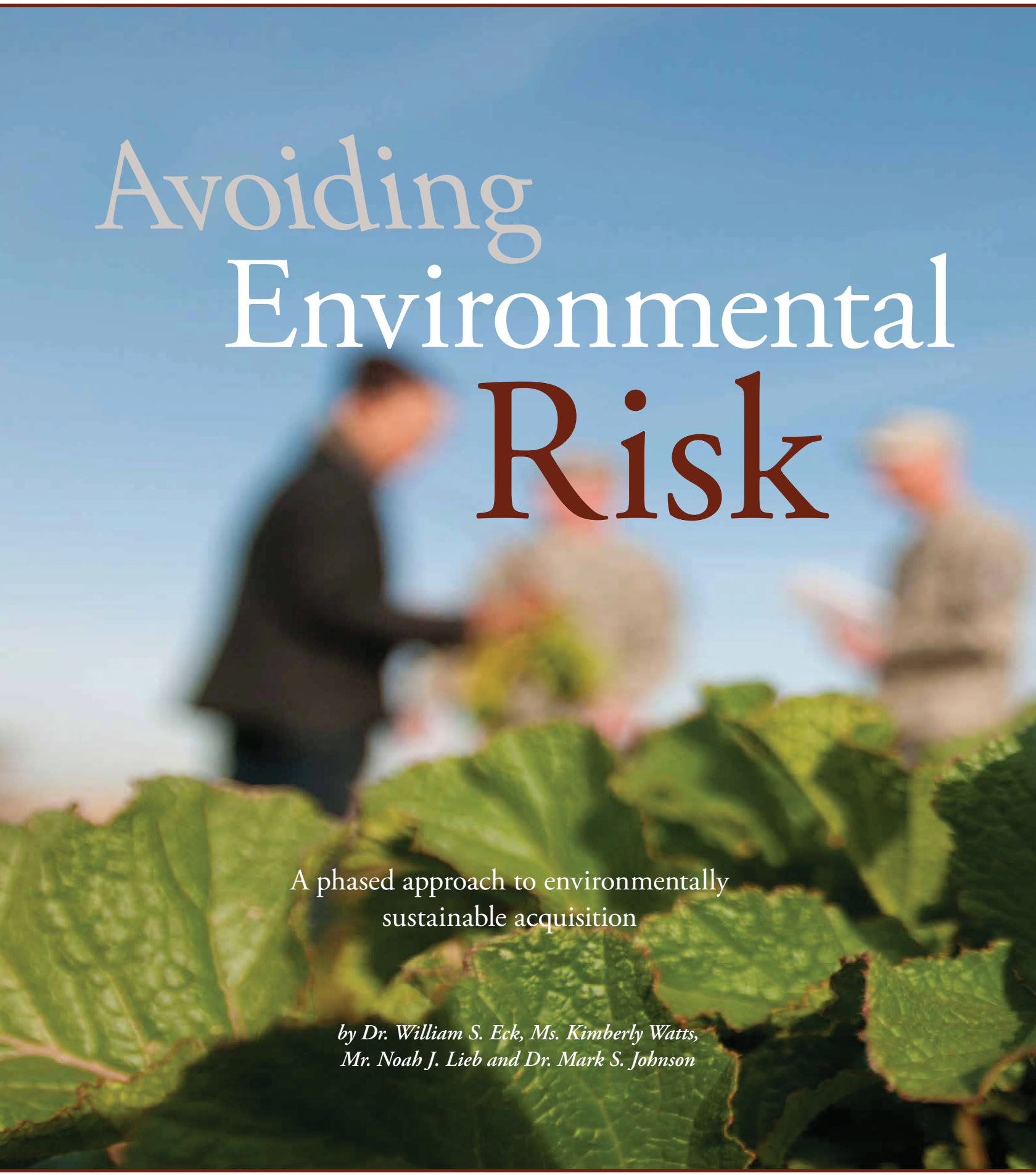


Avoiding Environmental Risk

A phased approach to environmentally sustainable acquisition

by Dr. William S. Eck, Ms. Kimberly Watts, Mr. Noah J. Lieb and Dr. Mark S. Johnson

GREEN AND GETTING GREENER
Materiel developed within the Army acquisition system must meet a variety of national and Army environmental requirements throughout its life cycle. More environmentally friendly and sustainable practices will help the Army promote workers' and Soldiers' health, and maintain range operations. Ignoring ESOH factors can cause major problems in fielding new materials and formulations. (U.S. Army photo by SFC Andy Yoshimura, U.S. Army Civil Affairs and Psychological Operations Command (Airborne))

The Army is committed to environmental stewardship, fostering an ethic that goes beyond compliance to sustainability. Several tools are in place to meet these goals; however, they have only been implemented on a small scale. This article will highlight a proven tool that enables managers to incorporate environmental concerns, through phased data collection for materials, as early as possible in decision-making. This will enable the Army not just to comply with current regulations, but also to minimize or eliminate environmental risks and liabilities to acquisition programs and sustain Army operations for years to come.

At this time, Army acquisition programs are focused on meeting performance requirements, while at the same time complying with national and Army environmental requirements throughout the weapon system life cycle. The National Environmental Policy Act of 1969 (NEPA) requires DOD to provide full disclosure of possible impacts, alternatives and environmental mitigation measures for its activities. All acquisition programs, regardless of size, must include an evaluation of whether the development, testing, production, fielding, operation and maintenance, and disposal of the system will affect the environment.

Executive Order 13514 ("Federal Leadership in Environmental, Energy and Economic Performance," dated Oct. 5, 2009; online at **http://www.whitehouse.gov/assets/documents/2009fedleader_eo_rel.pdf**) further requires government agencies to minimize the generation of waste and pollutants through source reduction (i.e., eliminate the environmental issue before it can even happen); reduce and minimize the quantity of toxic and hazardous chemicals and materials acquired, used or disposed of; and increase agency use of acceptable alternative chemicals and processes.

The Army has succeeded in meeting these broad goals; however, the problem has been, exactly what data are needed to ensure compliance, and how are they evaluated to help make sound decisions?

More than ever, resource limitations require that all programs, from research through acquisition, proceed with as much efficiency as possible. Current Army regulations require acquisition managers to consider environment, safety and occupational health (ESOH) issues in a Programmatic Environmental, Safety and Occupational Health Evaluation (PESHE), but the PESHE is not required until Milestone B. By that point, the Army may already have committed hundreds of thousands of dollars and significant man-hours to program research, development, test and evaluation (RDT&E), consistent with Budget Activity (BA) 1-3.

Delaying discovery of an ESOH-related problem until Milestone B increases development risk and may require costly project modifications, or result in future remediation costs or even project cancellation, depending upon the severity of the problem. (See Figure 1.) However, there is no guidance on what data are needed to help make ESOH decisions. This leads to evaluation based solely on known ESOH risks, using available data.

It is not safe to assume that having no data means that there are no risks. For maximum effectiveness, ESOH risks need to be identified as early as possible in the development process, ideally before being incorporated into an acquisition program. This article outlines a proven method of minimizing development risk and maximizing use of available resources.

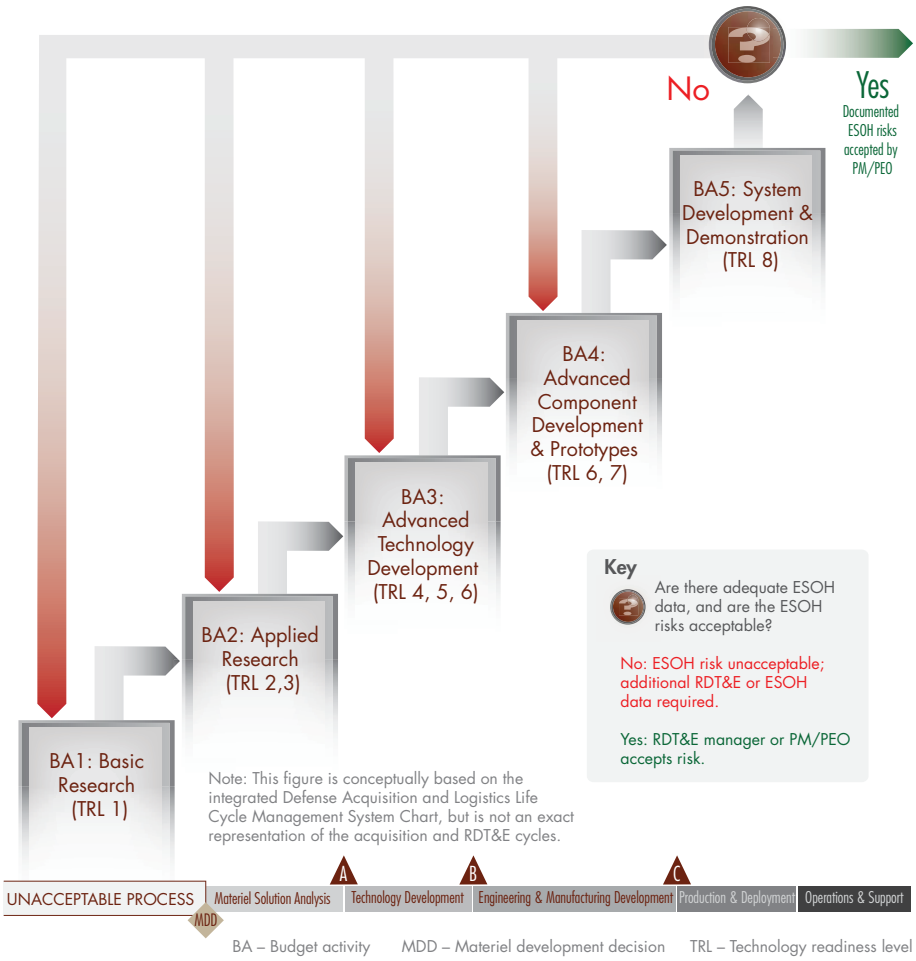
AT THIS TIME, ARMY ACQUISITION PROGRAMS ARE FOCUSED ON MEETING PERFORMANCE REQUIREMENTS, WHILE AT THE SAME TIME COMPLYING WITH NATIONAL AND ARMY ENVIRONMENTAL REQUIREMENTS THROUGHOUT THE WEAPON SYSTEM LIFE CYCLE.

A PHASED APPROACH TO ESOH

Starting in 2005, officials with the Toxicology Portfolio at the U.S. Army Public Health Command's U.S. Army Institute of Public Health (AIPH), in conjunction with the U.S. Army Research, Development and Engineering Command's (RDECOM's) Environmental Acquisition and Logistics Sustainment Program (EALSP), established a phased approach to environmental material assessment that has facilitated development of more environmentally sustainable alternatives for substances of greatest environmental concern in the Army inventory. (See Figure 2 on Page 54.)

The EALSP includes significant efforts to eliminate or reduce the presence of substances that have major impacts on human health and the environment, such as hexavalent chromium, perchlorate, hydrazine and lead. The program is also focused on replacing toxic munition components such as TNT and RDX with substances that are insensitive to accidental detonation and have fewer negative health and environmental impacts.

FIGURE 1



In the current process of ESOH evaluation, program managers (PMs) and program executive officers (PEOs) are required to evaluate ESOH risks at Milestones B and C through the PESHE. There is little or no guidance for what data to include, however, so PMs must evaluate and accept risks based solely on known ESOH data. Any unacceptable risks in the weapon system could require significant additional research and development. (SOURCE: AIPH)

An early evaluation of toxicity for each new substance has been an important part of these efforts, ensuring that potential replacement compounds and formulations are less toxic and environmentally hazardous than the materials they are replacing. A rational, phased approach to toxicity evaluation can help reduce risk and support decision-making from the very beginning of the development effort.

For example, if a substance has chemical properties that could raise an issue for environmental transport to groundwater, binders or other materials may be used to help reduce its mobility, thereby increasing sustainment potential. Methods used to evaluate ESOH risks should be appropriate to the stage of project development, with quicker, less expensive methods at the beginning of a development effort and more comprehensive detailed methods after initial selection decisions have been made; hence the term "phased."

For the development of energetic materials—explosives, propellants, pyrotechnics, etc.— this phased approach has been captured in the American Society of Testing and Materials (ASTM) Standard E2552, "Standard Guide for Assessing the Environmental and Human Health Impacts of New Energetic Compounds" (online at **http://astm.nufu.eu/std/ASTM+E2552+-+08**).

While Army Regulation 70-1, "Army Acquisition Policy," does not mandate development of the PESHE before Milestone B, by that point critical decisions have already been made on material selection in specific formulations and engineering designs. If the down-selected materials have significant ESOH risks, the Army could become liable for occupational exposures, requiring extensive remediation and restoration that also could affect future range use and training throughput. The phased approach to toxicity assessment seeks to make an ESOH evaluation compatible with each stage of the development process by applying appropriate assessment tools.

Additionally, it adds a data requirement to each stage for which managers can plan and program, keeping projects on time. Quicker, less-expensive assessment tools apply early in the development process as an indicator of potential problem areas, whereas more detailed, expensive assessment tools are used only as the item in development transitions past Milestone B.

Implementation of this phased approach is an improvement over the current ESOH risk process; however, it is just a start. The need for ASTM Standard E2552, and its applicability, extend well beyond the development of energetic materials. This ESOH evaluation approach provides guidance on data needs and evaluation, but it is not a requirement for all programs and is still limited by funding and interest.

The ideal process would integrate these ESOH data points as a requirement for advancing to the next stage of development. In this case, materials could transition to the next budget activity level or technology readiness level, with a definitive list of required ESOH data points but without a full evaluation. All materials that transition to the acquisition community thus would be fully characterized, with their risks well-defined, understood and ultimately mitigated.

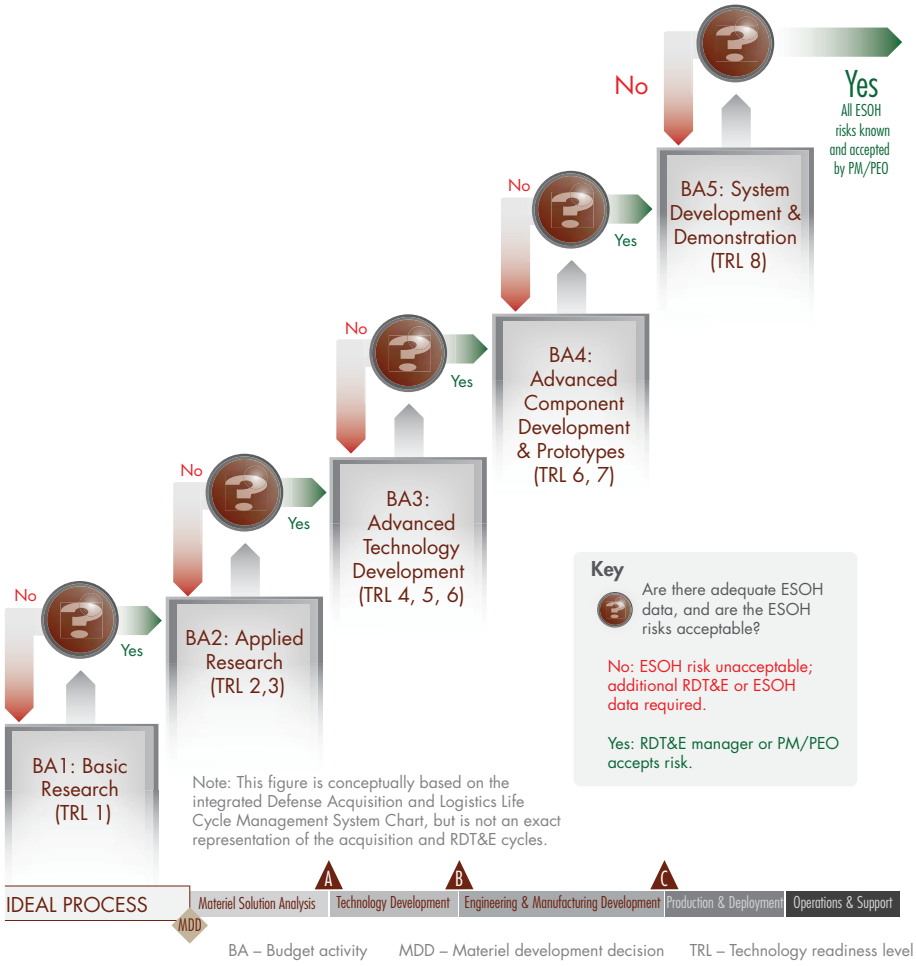
That is the ideal. A more reasonable and attainable goal would be to integrate a less restrictive form of this process into an improved RDT&E process, the purpose of which would not be to eliminate risk to the user community, but to provide enough data to the decision-maker to understand possible risks and account for them in moving forward. The Army will continue to rely on materials that have inherent ESOH risks in order to meet very strict, unique performance requirements; more complete ESOH data will enable the Army to mitigate dramatically any risks to Soldiers, workers and the surrounding community.

SUCCESS STORIES

Early efforts in applying this process have been highly successful, with promising new energetic materials evaluated through the RDECOM EALSP Ordnance Environmental Program (OEP) and DOD's Strategic Environmental Research and Development Program for energetic materials. This approach is gaining acceptance in other development efforts as well, such as the substitution of environmentally acceptable solvents and surface coatings.

As Figure 3 illustrates, the development of a new energetic material begins at the conception phase with the research chemists' proposed structure. This structure may not even have been synthesized, but its properties and performance characteristics can be evaluated using sophisticated computer

FIGURE 2



The proposed improved process incorporates ESOH evaluations earlier in the RDT&E process by requiring first the RDT&E manager (at BA 1–3) and then the PEO or PM (at BA 4-5) to evaluate both the amount of ESOH data collected and the risks identified in the process. In this case, unacceptable ESOH risks can require additional research at any point in the RDT&E cycle, forcing the acquisition back through the cycle. In the ideal process, complete ESOH data is still not a requirement but is an improvement on the current process, providing more complete information to the decision-maker. (SOURCE: AIPH)

modeling techniques. Toxicity and physical properties may also be assessed at this stage through the use of rapid, low-cost computer modeling. This initial computer modeling assessment is useful for comparing compounds and identifying potential areas of human and environmental health concern. The modeling assessment is also valuable in prioritizing testing later in development.

As small quantities (i.e., fewer than 10 grams) of the new substance become available in the synthesis and testing phases, relatively low-cost in vitro assay techniques can be used to predict likely toxic endpoints, such as acute oral toxicity, aquatic toxicity and mutagenicity. The researcher usually has down-selected to two or three possible candidates by this point in the development process.

Candidates chosen for further development and formulation will proceed to the demonstration and validation phase, involving the first, more definitive whole-animal testing such as acute oral toxicity studies (to determine the median lethal dose, LD50), 90-day oral subchronic studies or inhalation toxicity testing. Thus, longer-term studies take place only after considerable preliminary screening and assessment.

The phased approach to toxicity assessment has enabled researchers to select more environmentally sustainable energetic materials for the 2.75-inch Hydra rocket, one of the most extensively used munitions in the Army, a significant source of toxic constituents released on training ranges and one of the most environmentally problematic munitions in its current configuration. The M274 training warhead for the rocket contains perchlorate, and the M275 rocket motor propellant contains lead as a burn-rate modifier.

FIGURE 3

Stage	Action	Data Requirement	Cost	Uncertainty
Conception	Modeling	Physical/chemical properties; toxicity estimates	+	+++
Synthesis	In vitro testing	Toxicity screening	+	+++
Testing	In vitro testing	Toxicity screening	++	+++
Dem/Val	In vivo acute and subchronic toxicity testing; Advanced in vitro testing	Toxicity data, LD_{50}, LC_{50}, NOAEL, LOAEL	+++	++
Production	In vivo chronic toxicity testing	Toxicity data, cancer testing	++++	+
Storage & Use	Monitoring	Media samples	+	+
Demilitarization	Monitoring	Media samples	+	+

ASTM Standard E2552, "Standard Guide for Assessing the Environmental and Human Health Impacts of New Energetic Compounds," is a useful tool with applicability well beyond the development of energetic materials. The standard calls for various types of toxicity testing, matched here with the various stages of development. (SOURCE: AIPH)

The phased approach to environmental assessment was used during the effort to evaluate and replace the various components of the Hydra rocket, with the components now entering the final stages of RDT&E. New formulations were evaluated based on ESOH data, showing empirically that the new materials are more environmentally sustainable than the current ones.

Meanwhile, perchlorate-containing simulators—the M115A2 Ground Burst Artillery and M116A1 artillery and hand grenade simulators, and the M117/M118/M119 family of booby trap simulators—were identified as one of the largest sources of potential perchlorate contamination on Army training ranges. In fact, in 1997, the Environmental Protection Agency ordered a training shutdown at the Massachusetts Military Reservation (MMR) and Camp Edwards because of perchlorate and other munition-constituent contamination of the primary aquifer beneath MMR, the main source of drinking water for the residents of Cape Cod.

To maintain operations and eliminate a source of future environmental contamination, OEP officials, in conjunction with the assistant chief of staff of the Army for installation management and the U.S. Army Environmental Command, initiated the perchlorate elimination program that continues to this day. OEP investigators developed environmentally benign substitutes for the perchlorate-based fuels in the simulators. Final formulations were selected based on performance, cost and potential environmental impact, as evaluated using the ASTM process.

In a measure of the success of this program, a replacement for the M116 hand grenade simulator was approved for use at MMR

in 2010, allowing the first use of these devices in training in more than 10 years. Perchlorate-free M115/M116 simulators are now in production and available to Soldiers nationwide. Replacements for other handheld simulators are pending qualification and approval by state officials before fielding. The M115-M116 Simulator Perchlorate Replacement project team received the 2007 Secretary of the Army Environmental Award for Excellence in Weapons System Acquisition as a result of this development effort.

CONCLUSION

The new assessment tools that are part of the phased approach are cost-effective in helping to make ESOH-related development decisions for new formulations. They are applicable throughout the RDT&E process. Their use will not eliminate ESOH risks in weapon systems, but will provide enough data so that decision-makers can understand and mitigate any risks. Additionally, information gained regarding environmental fate—what happens to the compound in the environment—as well as transport and health effects can help transition promising new research by giving acquisition program managers the ESOH data they need. Focused testing or engineering can reduce uncertainty relating to the toxicity of new military-specific substances that could be environmental or occupational health threats, resulting in sustainable use by our forces in an increasingly regulated environment.

For more information, contact the Toxicology Portfolio at AIPH, at DSN 584-3980, 410-436-3980 or ***usaphctoxinfo@amedd.army.mil****. For more information on NEPA, go to* ***http://www.epa.gov/compliance/nepa/index.html****.*

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THE PHASED APPROACH TO TOXICITY ASSESSMENT HAS ENABLED RESEARCHERS TO SELECT MORE ENVIRONMENTALLY SUSTAINABLE ENERGETIC MATERIALS FOR THE 2.75-INCH HYDRA ROCKET, ONE OF THE MOST EXTENSIVELY USED MUNITIONS IN THE ARMY, A SIGNIFICANT SOURCE OF TOXIC CONSTITUENTS RELEASED ON TRAINING RANGES AND ONE OF THE MOST ENVIRONMENTALLY PROBLEMATIC MUNITIONS IN ITS CURRENT CONFIGURATION.

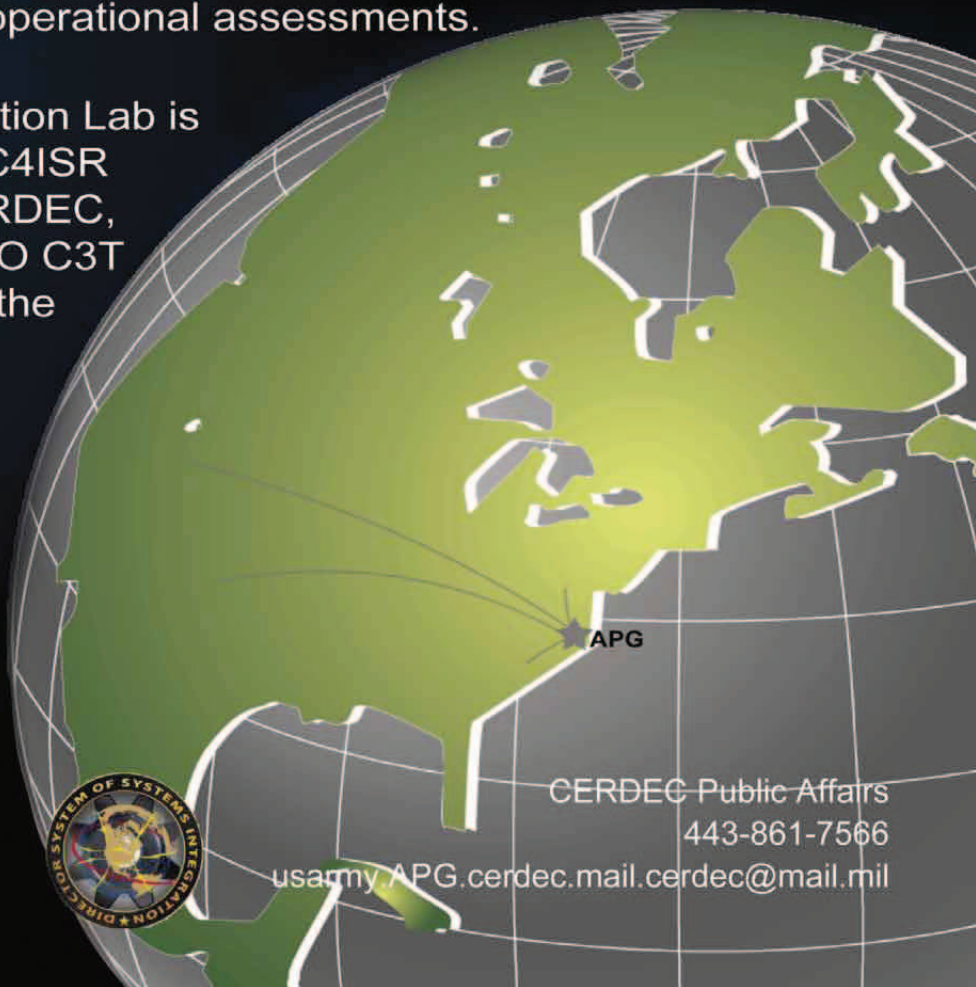
C4ISR systems integration Lab

CSIL: Technically Enabling Agile Acquisition

The C4ISR Systems Integration Laboratory at Aberdeen Proving Ground:

- Provides lab connectivity and technical expertise necessary to technically evaluate system-of-system C4ISR technologies in support of Agile Acquisition.
- Currently implements a slice of a Brigade Combat Team network which mimics the NIE network architecture and allows concurrent evaluation of end-to-end network system performance.
- Performs lab-based risk reduction by identifying network and application issues prior to systems being accepted for evaluation in the field, maximizing efficiency of resources and allowing field evaluations to focus on operational assessments.

The C4ISR Systems Integration Lab is a partnership within APG's C4ISR Center of Excellence of CERDEC, ASA(ALT), SOSI, ATEC, PEO C3T and PEO IEW&S; Ensuring the proper technical evaluation and characterization of networked systems.



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REAL-TIME TROUBLESHOOTING

USF improves fielding support to the Soldier by providing DSEs and FSRs to help troubleshoot the Army's digital capabilities and network. (U.S. Army photo)

FIELDING MADE *SIMPLER*

PEO C3T process improvements get C4ISR and other capabilities to Soldiers more easily, efficiently

by Ms. Ariel Arrosa, Mr. Rick Stoverink and Mr. Bob Wines

As units rotated into combat operations in Iraq and Afghanistan, it quickly became clear that there needed to be a repeatable, synchronized process to equip forces with new digital mission command and situational awareness equipment.

Fielding and resetting sophisticated command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) capabilities is a complex task. Communication systems, the network and all the support personnel must work in unison, and training must take place in a logical order.

That wasn't happening. Stand-alone systems were fielded one at a time, each with its own training. The result of that cumbersome, stovepiped process was that the digitized capabilities were fielded to just two to three brigades per year.

The remedy was unit set fielding (USF), a process begun in 2006 by the Program Executive Office Command, Control and Communications – Tactical (PEO C3T).

USF has vastly increased the rate at which capabilities are fielded to units and units are trained. It has been embraced by many Army organizations involved in fielding a wide array of capabilities, including HQDA G-3/6/8; the U.S. Army Training and Doctrine Command; U.S. Army Forces Command; National Guard Bureau; Office of the Chief of Army Reserve; and the Assistant Secretary of the Army for Acquisitions, Logistics and Technology.

USF effectively creates a one-stop shop for planning and implementing fielding and training, synchronizing and streamlining the process. Thus USF relieves some of the burden Soldiers face as they receive new capabilities and train to use them. As the Army continues to move away from fielding stand-alone capabilities and as technology becomes more interdependent, USF provides a proven method for integrating the technologies that end up in the hands of Soldiers, in both new fieldings and reset. For a budget-constrained Army, USF demonstrates that process efficiencies can have just as great an impact as procurement efficiencies.

With USF in place, the Army is now regularly fielding more than 100 units a year with state-of-the-art C4ISR capabilities.

NOT YOUR FATHER'S TOC

Tactical operations centers (TOCs) hold an increasing amount of interdependent capabilities. Army units can look to the USF process to get that equipment into the hands of Soldiers quickly and efficiently. (Photo by Claire Heininger)

As of January 2013, about 75 percent of active Army units at the brigade level and higher had been through the USF process, many of them more than once, along with 62 percent of Army National Guard, 31 percent of U.S. Army Reserve and 58 percent of multicomponent units.

Now, having played a leading role in digitizing Army units during the wars in Iraq and Afghanistan, the USF process will continue to bring efficiencies as the drawdown from Afghanistan continues and the Army looks to realign its forces.

MULTIPLE BENEFITS

Closely aligned with the Army Force Generation (ARFORGEN) process for building trained and ready forces, USF continues to shape the fielding of C4ISR capabilities. As the Army adjusts ARFORGEN to support current missions, USF will help ensure that Soldiers are properly equipped with the latest capabilities in a timely and coordinated manner.

USF has also assisted in the Army's approach to fielding and training for Capability Set 13 (CS 13), the current, integrated set of communication technologies and networked vehicles being fielded to select brigade combat teams scheduled to deploy to theater later this

year. The USF approach so far has supported the successful and timely delivery of CS 13 to the first two units.

Some of the C4ISR systems fielded through USF include Warfighter Information Network – Tactical (WIN-T), which provides the tactical communications network backbone; radios that allow commanders and Soldiers to take the network with them in vehicles and while dismounted; situational awareness and Blue Force Tracking technology; and mission command systems. Units have embraced the USF process, welcoming the training and support it brings. They have said it would be difficult for them to know exactly what was needed to properly field C4ISR equipment without the direct support of the various program manager (PM) representatives.

USF allows units to get the big picture of the planning required for the order of fielding, training requirements and integration of the various capabilities. To effectively schedule a new equipment training plan, fieldings must occur in a specific order so that training reflects how Soldiers fight. For example, data products must be fielded before the situational awareness capabilities of Joint Battle Command – Platform, Tactical Mission Command products and WIN-T. Those capabilities must be delivered before the Standard Integrated Command Post Shelters.

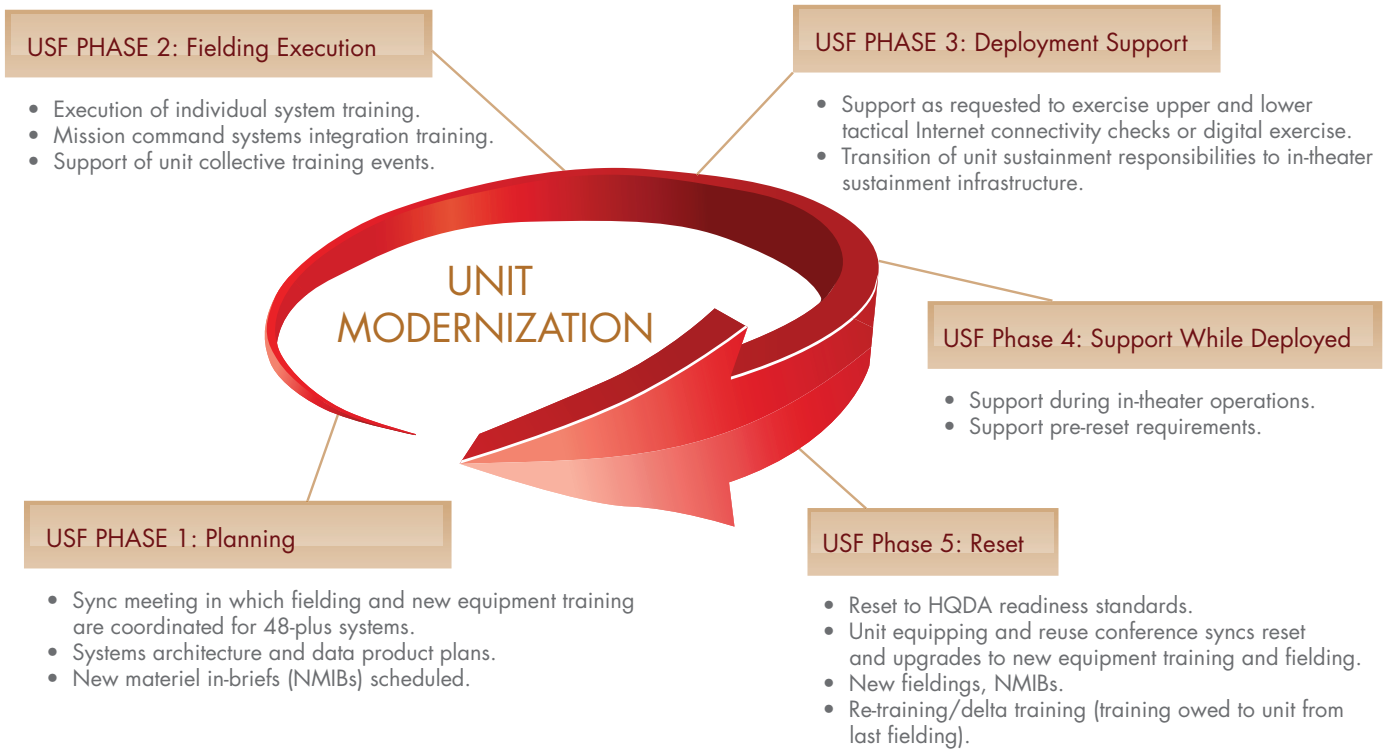
With everyone at the same table, USF averts conflicts in training and scheduling. This is particularly important for National Guard and Reserve units, as they often have different training challenges than active Army Soldiers, requiring sizable commitments of people, time and resources. The USF process takes into consideration that Guard and Reserve units do not always have the available manpower to train, that they may need to find a secure place to store the equipment during training, and that suitable locations to host training exercises might not be readily available.

A PHASED APPROACH

USF includes five phases: the planning or synchronization meeting; fielding execution; deployment support; support while deployed; and the reset and reuse phase. (See Figure 1 on Page 62.) Commands and program managers meet at the first and fifth phases to coordinate events and schedule fielding and training, while the other three phases focus on setup, training, execution and support. The phases are as follows:

- **Phase 1**—PM representatives meet with Army units to go over the list of authorized equipment, explain

FIGURE 1



The five phases of the USF process support the phases of the ARFORGEN model. (SOURCE: PEO C3T)

the required training and lay out the order in which the systems can be fielded. The synchronization meeting uses a round-robin format so that each unit can sit down with each PM representative and hammer out a fielding and training schedule. The training is aligned with the unit's schedule, giving decision-making power to the unit. With all the PM representatives in the same room with the unit, the USF process ensures that units leave with all questions answered. The process also eliminates the need for PMs to travel to meet with units individually, which saves time and travel expenses.

By eliminating the previous process whereby individual PMs fielded different units on different schedules, USF allows Soldiers to focus on training without the distractions of fielding details. It has also increased the breadth of capabilities the C4ISR community can field to units at one time.

Biweekly USF battle update briefs allow representatives from the USF community to update the C4ISR senior leaders on the current status of all programmed, planned and ongoing fielding, training and reset operations for units across all Army field support brigade regions. The briefs provide a way to quickly identify areas that need additional command emphasis or rapid decisions regarding fielding operations across all Army components.

- **Phases 2 to 4**—Users first learn the initial applications and systems, then are trained to operate them in a collaborative environment in order to build the integrated, networked common operating picture expected on today's battlefield. This system-of-systems approach augments Soldiers' proficiency with digital capabilities. Throughout these phases, digital systems engineers (DSEs) and

field service representatives (FSRs) provide troubleshooting support to the unit and handle requests for assistance. They help the units with the initial setup and integration of the capabilities and stay with them throughout the process, including training. PEO C3T developed this concept to better support the Soldier by giving the unit a single USF team captain.

DSEs, the first line of defense when issues arise with C4ISR capabilities or the network, work with units during reset and fielding. FSRs deploy and travel with units and are called on to resolve any issues with the systems. The close working relationships among DSEs, FSRs and units build the Soldiers' trust and confidence, which is imperative for mission success.

Soldiers report issues through the "single interface to the field," a point of contact through whom they can obtain support for any C4ISR system. Problems reported by DSEs or FSRs are also reported to a support operations center at Fort Hood, TX, which functions 24/7.

- **Phase 5**—This is the reset and reuse phase, which takes place after a unit returns from deployment, when equipment is sent for cleaning and upgrades. Units meet with senior command representatives, regional support representatives and DSEs to tackle any problems that took place in the field or could arise in the pending reset process. Units learn, item by item, what equipment is included in the reset and the fielding timeline. Often this also includes fielding new equipment to them.

THE WHOLE PACKAGE
The USF process helps to manage the mechanics of fielding and resetting sophisticated C4ISR capabilities, such as the mission command systems that are a part of this TOC. (U.S. Army photo)

CONCLUSION

Over time, the coordinated and streamlined USF process has delivered efficiencies. As the Army continues its drawdown from Operation Enduring Freedom and rebalances its resources to other regions, units will continue to realign equipment and train for new missions.

USF is securely established as an essential tool not only to support the Army's future alignment, but also to offer efficiency in fielding, training and reset in a fiscally constrained climate.

For more information on PEO C3T, go to ***http://peoc3t.army.mil/c3t/****. For additional information for DOD employees, including a video interview with a former DSE, go to milTube at* ***http://go.usa.gov/4Qdx*** *(Common Access Card login required).*

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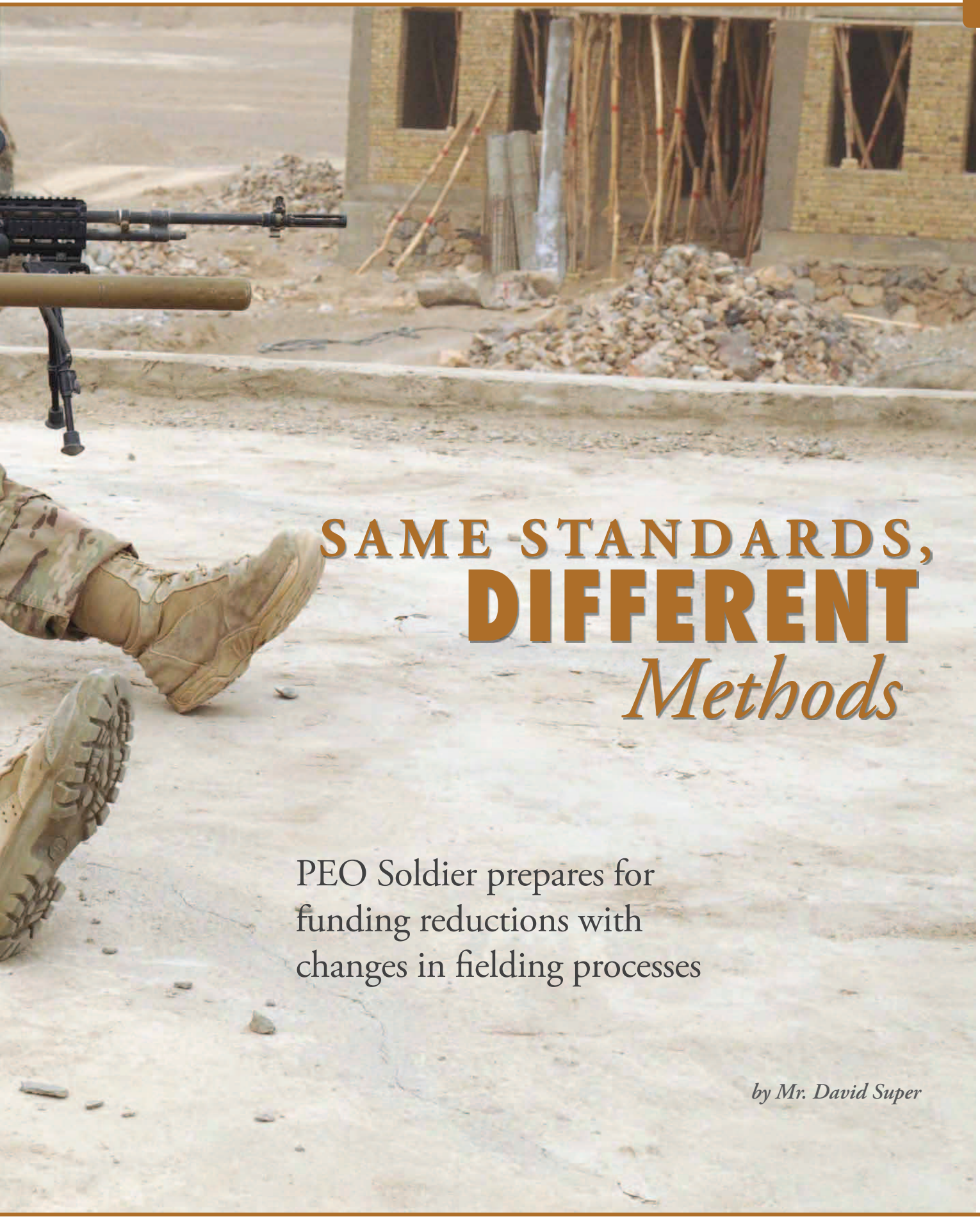
TRAINED AND READY

New equipment training is a vital element of fielding the latest OCIE and PPE; PM SPIE's Logistics Management Directorate supports about 200,000 deployed and deploying Soldiers a year. Here, a sniper team with 2nd Battalion, 23rd Infantry Regiment from Joint Base Lewis McChord, WA, wearing OCIE and PPE in the OEF Camouflage Pattern scans the area Jan. 30 from a rooftop in Spin Boldak District, Kandahar province, Afghanistan. (Photo by SSG Shane Hamann, 102nd Mobile Public Affairs Detachment)



SAME STANDARDS, DIFFERENT *Methods*

PEO Soldier prepares for funding reductions with changes in fielding processes

by Mr. David Super

With the coming reduction in overseas contingency operations funding, the project manager for Soldier protection and individual equipment (PM SPIE) looked for efficiencies in the methods used to stage, field and conduct new equipment training (NET) for the Rapid Fielding Initiative (RFI). PM SPIE manages the RFI process, procuring, staging and fielding uniforms and equipment for all Soldiers deployed to Iraq and Afghanistan.

The PM found efficiencies in the areas of staging and delivery, developing new processes that require fewer personnel, less leased storage space and more effective tracking software.

"Every project manager in the Army has to deal with the technical and fiscal challenges of developing new equipment and getting it into the hands of the Soldier," said COL Robert Mortlock, PM SPIE. "That means we have to watch costs in every step of the process—from testing and development to acquisition, and finally to fielding the equipment with the Soldier."

The changes made by PM SPIE promise to save more than $68 million through FY14 without lowering fielding standards. PM SPIE's Logistics Management Directorate began implementing the improvements in FY11 while fielding almost 7 million items of equipment, such as flame-resistant uniforms, body armor, helmets, boots, gloves and protective eyewear. These items fell into two basic categories: organizational clothing and individual equipment (OCIE) and personal protective equipment (PPE).

FOCUS ON FIELDING

"We could see that with the approaching wind-down of activity in theater, the OCO [overseas contingency operations] funding would begin decreasing. My goal was to work with leadership and my team to come up with an affordable process that would not only reduce costs, but meet the Soldier's fielding and NET needs," said Preston Turner, director of logistics for PM SPIE. Historically, the Logistics Management Directorate has managed the fielding and NET of the latest OCIE and PPE, supporting about 200,000 deployed and deploying Soldiers a year.

"We believe NET is vital. It makes no sense to invest millions in developing and issuing the world's best clothing and equipment if you do not train the Soldier in how to get the most out of it," Turner said.

The drawdown from Iraq already has brought significant reductions in OCO funds. PM SPIE has seen its OCO funding decline from $1.2 billion in FY10 to less than $400 million in FY13, and more reductions will come with the drawdown from Afghanistan.

Looking to the future, PM SPIE leadership realized that its staging and delivery processes needed to be modified

HIGH-VOLUME OPERATIONS

PM SPIE's Logistics Management Directorate is responsible for fielding OCIE and PPE to Soldiers in theater; in FY11, it fielded almost 7 million items of equipment. Here, a Soldier with the 1st Air Cavalry Brigade (1st ACB), 1st Cavalry Division stands amid a sea of duffel bags and rucksacks at Camp Marmal, Balkh province, Afghanistan, May 14, 2012. The 1st ACB was redeploying to Fort Hood, TX, after a year in theater. (Photo by SGT Richard Wrigley, 1st ACB Public Affairs)

to maximize available funding. "I learned long ago in the Army to keep an eye out for problems on the path forward," said Turner, a retired Army staff sergeant. Turner focused on achieving both life-cycle cost savings and real reductions in business costs.

Reducing the delivery costs required a new approach, which was developed and validated between October 2011 and May 2012. During this time, Turner and the deputy PM SPIE co-chaired an integrated project team (IPT) with representatives from the U.S. Army TACOM Life Cycle Management Command, U.S. Army Forces Command, HQDA G-4, U.S. Army Material Command and U.S. Army Sustainment Command.

Since 2004, the directorate has used contractor support teams consisting of 21 people to conduct the fielding and NET. The PM had six of these 21-person teams fielding equipment to deploying units. Most of the contractors were retired NCOs, each very experienced in the uniforms and equipment that PM SPIE was issuing to Soldiers. As a result, the PM consistently received high marks from units and Soldiers for the way in which the equipment was issued and how the training was conducted. Each team conducted a mission within two weeks, during which they issued 650,000-800,000 separate items to 3,000-5,000 Soldiers. OCO funds currently pay for these activities.

Turner sought methods for reducing RFI delivery costs while maintaining the high quality and efficiency of the existing process. After considering multiple alternatives, the IPT recommended implementing a new process that would make maximum use of existing government assets. The IPT recommended using a team of five TACOM civilian

subject-matter experts to oversee the fielding and NET. They would be augmented by a detail of 26 Soldiers, 16 from the unit to man the stations and 10 from the field support battalion to help with setting up and moving the thousands of boxes of uniforms and equipment. In addition, three personnel from the post central issue facility (CIF) would support the event by running forklifts to empty the tractor-trailers.

To ensure that adoption of the new process would go smoothly and gain Soldier acceptance, Turner secured the IPT's agreement to retain the performance standards of the present fielding system. These include the time required to set up the fielding before the start, the amount of time required to conduct the fielding itself, the number of Soldiers who can be fielded within a 10-hour period, and the time it takes to close out a fielding event and return remaining inventory to the warehouse. He then led the planning and execution of three pilot fielding events at Fort Campbell, KY, using the new process. In the pilot events, PM SPIE fielded and trained three brigade combat teams (BCTs) from March through May 2012.

These pilot fieldings, using the TACOM/Soldier fielding teams, demonstrated that the new process could deliver the required OCIE and PPE to Soldiers and meet the same performance standards, described above, as PM SPIE's contractor teams. The Army deputy chief of staff, G-4 approved the new process in July 2012 for all BCT-size pre-deployment RFI fieldings in the continental United States (CONUS), U.S. Army Europe and U.S. Army Pacific Command. The projected cost avoidance for the new RFI procedures amounts to $37.6 million through FY14.

SAVING ON SPACE

The IPT also looked at the costs of warehousing and staging shipments of equipment for fielding events.

To meet the demand for staging operations to support Operation Iraqi Freedom and later Operation Enduring Freedom (OEF), PM SPIE leased two commercial warehouses in the Washington, DC, area. As demand decreased, Turner determined that the PM could both reduce costs and increase efficiency by consolidating PM SPIE products into one government-managed facility. The savings would come from lower real estate costs and reduced personnel needed to operate the staging facility.

The IPT considered four possible government locations for the facility. Using Lean Six Sigma tools and a cost-benefit analysis, the IPT determined that a facility in Lansing, MI, was the best-value solution. The TACOM Clothing and Heraldry Central Management Office—Program Executive Office (PEO) Soldier's sustainment partner—had previously planned to lease the location. This new facility will store and repair OCIE in the OEF Camouflage Pattern. (OCIE in the Universal Camouflage Pattern will be cleaned and maintained at a different location.) This move will result in $25.2 million in cost avoidance through FY14.

While waiting for the availability of the new CONUS regional facility, Turner consolidated PM SPIE equipment into one of its original two commercial facilities. To expedite the savings to the Army,

STREAMLINING DELIVERY

A worker at PEO Soldier's former warehouse at Middle River, MD, moves a wooden shipping container used for fielding OCIE in the Operation Enduring Freedom Camouflage Pattern to theater. Closing the Maryland-based facility early and shifting those operations to Lansing, MI, has helped PM SPIE save $5.7 million. (Photo by Michael Clayton, PM SPIE)

REDUCING OVERHEAD

PM SPIE first used this Haymarket, VA, warehouse for consolidating shipments and logistics. The high cost of facilities in the Washington, DC, area led to relocation of shipping facilities from this location. (Photo courtesy of PM SPIE)

PM SPIE vacated one facility six months earlier than originally planned. Including all costs involved in the early closeout, this action saved the Army $5.7 million in lease payments and labor charges.

SOFTWARE SOLUTIONS

Turner also made more intensive use of two Web-based software applications the PM had in place. These applications significantly reduced cost and enabled more effective management of OCIE.

E-Order, the first application, is an online ordering system that enables fielding of RFI uniforms and equipment to Soldiers unable to participate in a regular RFI fielding event. Soldiers go to their CIF on post, verify their deployment status and provide their unit name and sizing information through E-Order.

The order goes from the CIF to PM SPIE staging facility. PM SPIE personnel receive, validate and ship the order back to the CIF within 10 days of receipt. This saves the time and money associated with the previous process, in which PEO Soldier personnel traveled back to the unit or to theater to supply Soldiers who had missed the fielding event. E-Order is now at CIFs at every large Army post that deploys Soldiers.

The second Web-based application is the Standard Management Asset Readiness Tool (SMART), which tracks all equipment from contract award, to receipt of equipment from the vendor, to fielding to Soldiers. It improves the PM's ability to synchronize supply with demand in order to ensure that sufficient equipment is available for fielding events. The SMART system is Army-accredited and includes a module to score and save the results of First Article and Lot Acceptance Tests for all PPE, including helmets, soft body armor and hard body armor.

CONCLUSION

Through these process changes, PM SPIE is successfully fielding vital lifesaving gear and preserving millions of tax dollars. These efforts also gained recognition from the Army: Turner was named 2012 Army Logistician of the Year.

"The big lesson we learned in this process is that it pays to be proactive when you see changes are coming," said Mortlock. "We knew changes were coming, so we studied our options, made our decisions and pressed ahead. As a result, the Army is already benefiting from lower costs, and Soldiers are benefiting from the improved fielding processes."

For more information on PM SPIE's efforts, contact Doug Graham at ***douglas.f.graham.ctr@mail.mil****.*

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BEYOND *a* Common Operating Environment

Envisioning next steps to further improve interoperability and reduce integration time

by Ms. Jill Smith

Efficiency and cost savings are essential in the Army's current fiscally constrained environment. As the Army completes the drawdown of troops from Afghanistan, an opportunity exists for the science and technology community to focus on future, leap-ahead technologies for next-generation systems by enhancing the current Common Operating Environment (COE) vision.

The current premise of the COE vision is that the Army research and development community can shorten the development timeline, lower development costs and reduce the time required to integrate and certify systems by modernizing equipment and weapon systems around a common set of information technology (IT) standards and architecture. Until recently, the research, development and acquisition process called for meeting Soldiers' requirements by creating a system that inevitably worked as a stand-alone entity, leading to hardware and software duplications. The Army aims to alleviate these duplications by implementing COE concepts.

The COE implementation plan introduced in 2011 promotes open systems, integrated architectures and common standards to maximize interoperability among applications, support the goals of the Army Enterprise Network Architecture developed by the Army's chief information officer/G-6 and facilitate new functionality. The plan places Army programs into six computing environment (CE) categories—command post; data center/cloud/geospatial foundation; sensor; mounted/handheld; real-time/safety-critical/embedded; and mounted—based on mission limitations of size, weight, power and bandwidth. The result is a common software foundation that facilitates interoperability and reuse of common components. The Army aims to

RAPIDLY ADDING CAPABILITIES
Through processes such as the NIE, the Army has quickly introduced new C4ISR/EW systems. Here, Soldiers participate in NIE 13.1 in November 2012. (U.S. Army photo)

implement these current COE concepts over the next five years.

Identifying CE categories and adhering to common Army standards are significant steps toward improving interoperability and reducing integration time. But could the Army go further?

A NEW APPROACH

Even with the COE, the Army faces significant challenges in the areas of size, weight, power and cost (SWAP-C). The Army continues to add electronic equipment to vehicles to satisfy the ever-increasing demand for bandwidth, as well as to counter constantly evolving threats. Through processes such as the Network Integration Evaluation (NIE) and other rapid fielding initiatives, the Army has quickly introduced new command, control, communications, computers, intelligence, surveillance, reconnaissance and electronic warfare (C4ISR/EW) systems.

However, these systems put a significant demand on the limited SWAP-C budgets of most military platforms, from tactical vehicles and aircraft to Soldiers themselves. Environmental constraints such as the theater of operations, types of threats, terrain and operational conditions limit the allowable SWAP-C for C4ISR/EW systems, even if Army platforms were able to evolve at the same rate as C4ISR/EW systems.

What I am proposing is a new approach to designing C4ISR/EW systems on military platforms.

Each platform requires mission equipment such as antennas, radio frequency (RF) amplifiers, transmitters and receivers, real-time processing resources, RF and data distribution networks, miscellaneous sensors and user interfaces. In this approach, we have

begun working with the platform owners and equipment developers to establish a suitable architecture that could leverage common software components and standard interfaces in a variety of ways through software to create C4ISR/EW applications. (See Figure 1.)

This approach envisions that military platforms of the future will have similar characteristics to today's smartphones, in that they will provide a wide variety of functions and capabilities on a single platform, using common components and interoperable software and hardware. This new approach is a natural but significant evolution of the Army's current COE implementation plan. It allows for common interfaces, hardware subcomponents and software components for developers that are traditionally within the C4ISR/EW systems domain.

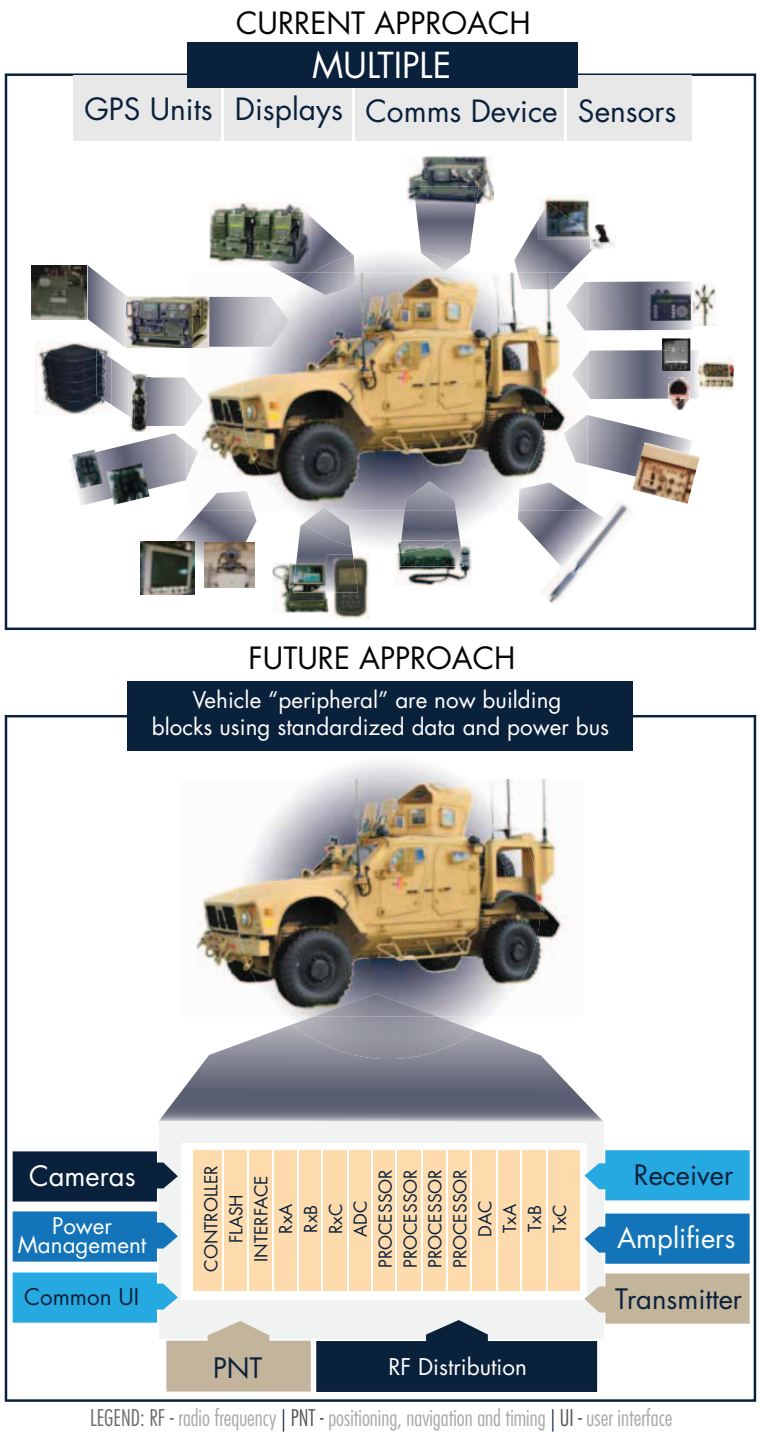
Three key elements are required in order to realize this new approach:

- A modular, open-hardware architecture and associated standards that can support all required C4ISR/EW capabilities with significant room for growth.
- A modular, open-software architecture and associated software tools and libraries sufficient to implement all required C4ISR/EW capabilities.
- Resource management tools and algorithms that enable multiple capabilities to share common hardware and software resources.

EXPLOITING COMMONALITIES

At first glance, C4ISR/EW systems, such as counter radio-controlled improvised explosive device electronic warfare (CREW), tactical communication, and position, navigation and timing capabilities, may appear to have nothing in common. In reality, these systems

FIGURE 1



LEGEND: RF - radio frequency | PNT - positioning, navigation and timing | UI - user interface

Currently the military uses a single-box approach to electronic warfare and communication systems, which results in numerous items with different functions but the same or similar components. With a common interface box, systems could leverage shared components. (SOURCE: CERDEC)

DOING MORE WITH LESS
As the Army increases C4ISR capability, it runs out of space on its vehicles and Soldiers. CERDEC aims to drastically reduce the size, weight, power and cost burden by advancing projects that enable sharing of C4ISR hardware and software components. (U.S. Army photo by SGT Christopher Bigelow)

exploit the electromagnetic spectrum and have similar architectures, which may include transmitters, receivers, processing units and user interfaces.

In many cases, C4ISR/EW systems overlap in their use of the electromagnetic spectrum and have similar processing requirements. These similarities suggest the potential for sharing components among C4ISR/EW systems on a military platform, which could reduce total life-cycle costs for all such systems. In addition, sharing components among C4ISR/EW systems on a single platform, such as a ground or air vehicle or the Soldier, could greatly improve interoperability and compatibility of the individual systems.

Leveraging common components to deliver capabilities is critical to realize all of the benefits of open hardware and software architectures for implementing C4ISR and EW capabilities. However, reducing the amount of hardware on the platform to realize significant reductions in SWAP-C requires sharing components among C4ISR/EW capabilities as much as possible, which introduces new challenges. This extreme challenge exists because the developer controls all processing requirements. For example, EW capabilities must be more responsive to ever-changing threats. In order to rapidly upgrade for new threats, this proposed architecture requires that resource management tools and frameworks be developed to aid in creating new C4ISR/EW capabilities, while still meeting the stringent timing requirements of EW capabilities.

One can choose from numerous available standards for open hardware, but the real challenges exist in selecting a standard that can evolve with growing demands, and selecting from the many options to ensure that multiple vendors can build to the standard. For example, the processing demands and data flows required for many C4ISR/EW systems call for an appropriate data bus that supports the data transfer among processing modules.

Most of these backplanes do not address RF signals, so digital backplane standards would have to include RF interface standards. Currently, all of these standards leave too much flexibility in the way modules use the data bus provided on the backplane, yet there cannot be optimal interoperability without clearly defining this mechanism. Additional

LOOKING AHEAD AT THE COE

The premise of the COE is a common set of IT standards and architecture that will support the Army's modernization of network and other capabilities for Soldiers on the battlefield. Here, a Soldier pulls security during a patrol Dec. 2, 2012, near Forward Operating Base Shank in Logar province, Afghanistan. (U.S. Army photo by SPC Alex Kirk Amen, 115th Mobile Public Affairs Detachment)

hardware components also need to be specified, such as digital interfaces for RF receivers, transmitters, sensors and amplifiers.

SHARING COMPONENTS

The Communications – Electronics Research, Development and Engineering Center (CERDEC) of the U.S. Army Research, Development and Engineering Command is working on sharing components among C4ISR/EW systems.

CERDEC is demonstrating several capabilities with common components across EW and communications systems, as well as working with Project Manager (PM) Electronic Warfare of Program Executive Office Intelligence, Electronic Warfare and Sensors (PEO IEW&S) on open architectures and networking architecture for EW. Concurrently, CERDEC supports PEO Command, Control and Communications – Tactical (PEO C3T) in communication systems architectures.

The current COE effort began with the Vehicle Integration for C4ISR/EW Interoperability (VICTORY) initiative, whereby specifications are part of the real-time, safety-critical CE; they define data bus architecture and services to enable the networking of C4ISR/EW equipment onboard a vehicle. CERDEC leads several efforts in VICTORY standards and is actively investigating and developing modifications that support sharing of RF components.

CERDEC is also leveraging two Army programs of record—PEO C3T's Mid-Tier Networking Vehicular Radio and PEO IEW&S' Multi-Function Electronic Warfare—to demonstrate a SWAP-C reduction for both systems by sharing amplifiers and antennas.

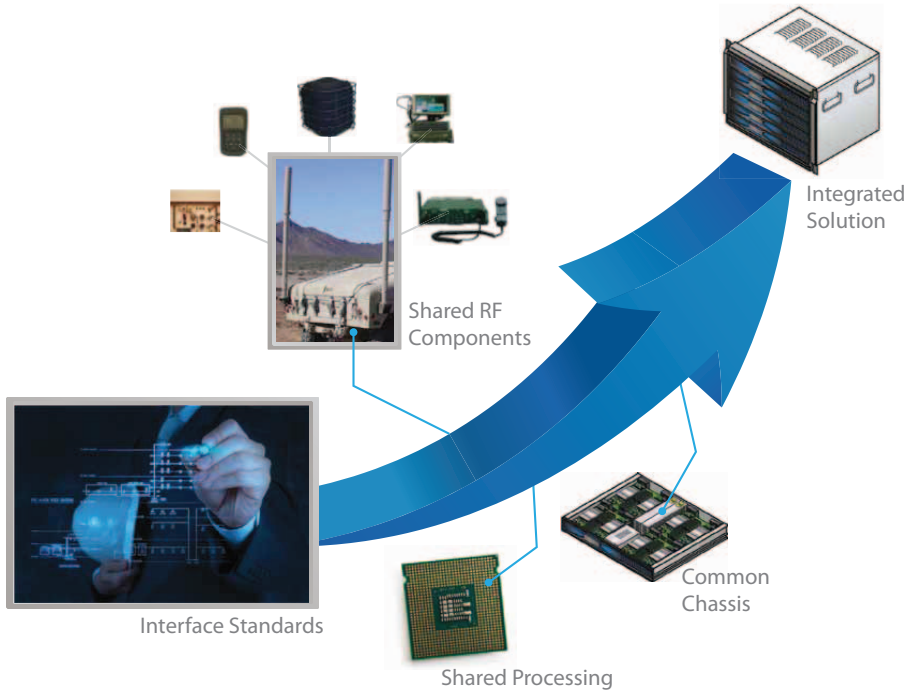
This architecture goes a long way in facilitating system interoperability. However, proper integration of advanced C4ISR/EW devices requires additional VICTORY specification. For example, the VICTORY standard must be modified to include an RF bus as well as a precision timing distribution capability. VICTORY is currently limited to intra-vehicle data exchange, and it needs to be extended to inter-vehicle networking so that it can support collaboration, coordination and distributed processing across multiple vehicles in support of C4ISR/EW capabilities. This will de-conflict missions and reduce the SWAP-C of each vehicle. VICTORY addresses tactical vehicles, but the COE addresses all tactical platforms; standards must be developed for networking on dismounts as well as airborne and fixed platforms.

Beyond C4ISR/EW interoperability for vehicles, CERDEC is researching common software architectures and development environments for communication and EW waveforms using a common set of hardware. (See Figure 2.)

Software architectures also offer many options. A top option for C4ISR/EW capabilities is the Software Communications Architecture (SCA), developed through the Joint Tactical Radio System program to provide an open framework that describes the hardware and software interfaces for software-defined radios.

Specifications support only communication requirements; however, today's operational environment requires the simultaneous usage of EW, communication and other C4ISR systems. Many C4ISR/EW systems have been designed under a proprietary architecture; designing a nonproprietary, open architecture that supports simultaneous usage of these

FIGURE 2



Over time, the Army can reach a fully integrated solution for a COE by standardizing software and hardware interfaces and then moving to shared components, common chassis and shared processing. (SOURCE: CERDEC)

systems poses a complex problem requiring further research and development. Few vendors have entered this arena because of these challenges.

No vendor has met the end-state objective of a fully integrated solution. While not the ultimate answer, the SCA provides an excellent starting point for next-generation C4ISR/EW capabilities. Modifications will be required to support simultaneous C4ISR/EW operations, and EW and ISR.

CONCLUSION

The Army faces not only technical challenges when implementing this new approach in developing C4ISR/EW capabilities, but also acquisition and cost challenges. Individual systems can no longer be developed in isolation. PMs and PEOs will have to work together from the start of development through testing, fielding and maintaining in the field to ensure that all capabilities meet their requirements.

As an alternative, the PEO/PM structure could be modified to support the new architectural approach. In addition to being a structural shift, this new approach will entail an initial startup cost greater than that of a traditional program of record because of the requirement for common hardware and software architectures and new development tools.

The savings over time will more than outweigh the startup cost, however. Significant cost savings exist in the management of inventory for maintenance and repair, field support and potentially other areas. This is in addition to the efficiency of building compatibility and interoperability into C4ISR/EW capabilities from the start, which avoids having to fix problems in those areas after fielding. Finally, modular open hardware and software will enable rapid upgrades to existing capabilities, as well as the insertion of new capabilities that may not even have been considered.

The next generation of COE will reflect a paradigm shift in C4ISR/EW capability development. Implementing this new approach would pose significant challenges, but with the growing reliance of our Army on technology, can we really afford not to continue to push the status quo and advance COE?

For more information regarding the CERDEC perspective on COE, contact the CERDEC Corporate and Public Communication Office at 443-861-7566.

MS. JILL SMITH has been the director of CERDEC since October 2010. She plans, directs, manages and executes the Army's applied science and technology investment in Army programs that span the C4ISR domain. A member of the Senior Executive Service since 2001, Smith holds a B.S. and an M.A. in mathematics, both from Shippensburg State College. She completed additional graduate work in statistics and electrical engineering at the University of Delaware. Smith is Level 3 certified in systems planning, research development and engineering (SPRDE) – systems engineering and Level 2 certified in SPRDE – program systems engineering.

TAKING TRAINING ANYWHERE

The FOV2GO viewer yields images such as this one, of Mars' Gale Crater using the Mars Rover virtual viewing app. Crowd sourcing and open-source development are yielding low-cost immersive viewers like FOV2GO that could provide warfighters with realistic virtual training whenever and wherever they need it. (Image courtesy of USC ICT)

A NEW WORLD VIEW

Open-source designs born of Army-funded R&D are creating a new model for affordable virtual reality training

by Dr. Randall W. Hill Jr. and Ms. Orli Belman

Scientists exploring ways to make virtual reality (VR) training systems more expansive and less expensive are leveraging open-source design and innovative funding methods to discover new techniques and technologies. The goal is to broaden the capabilities and reduce the costs of head-mounted displays (HMDs), which currently can cost as much as $50,000 each. That wider availability translates into the possibility of fully immersive training, available anywhere and anytime, at a fraction of current costs.

Much of this work is taking place at the University of Southern California (USC) Institute for Creative Technologies (ICT), an Army-sponsored university-affiliated research center managed by the U.S. Army Research Laboratory. ICT focuses on enhancing training through increased immersion—advancing the use of engaging stories, simulated scenarios, virtual humans, virtual reality environments and the tools needed to deliver them.

With a goal of disseminating VR research breakthroughs to enable technology

SHADES OF PROGRESS

The Wide5, a wide field-of-view HMD developed in 2006 through a small business technology transfer contract with the Office of Naval Research, illuminates the face of ICT MxR Lab Senior Research Associate Evan Suma. The Wide5 marked a milestone in the development of HMDs, setting a new precedent for immersive viewers, but at a high price point. (Photo by Branimir Kvartuc/AP Images for JP Selects)

transitions, the ICT's Mixed Reality Lab (MxR) is developing open-source hardware and software, purchasing off-the-shelf components and leveraging industry collaborations. This unconventional approach can benefit Soldier training through accelerated access to state-of-the-art HMDs that could soon be available for as little as $300 each.

A DISRUPTIVE MODEL

"We've had leaders come to our lab lamenting the high cost of HMDs," said Mark Bolas, a VR pioneer, ICT's associate director for mixed reality research and development, and director of the MxR Lab. "We decided the best way to influence the industry was to disrupt it by releasing a number of open-source designs."

Bolas calls these designs "sockets" because they represent plug-and-play approaches that solve specific technical challenges including wide field-of-view optics, distortion correction and modular display choices for a variety of immersive viewer platforms.

The open-source Socket suite of designs incorporates an insight that came from the Wide5, a wide field-of-view HMD that Bolas developed with Ian McDowall in 2006 as part of a small business technology transfer contract with the Office of Naval Research.

The Wide5 set a new precedent in the field of immersive viewers but came with a high price tag. The next challenge was

to maintain the same design philosophy while keeping a sharp eye on finding low-cost alternate components.

"We know that to have an immersive experience, viewers must provide a field of view that's greater than 90 degrees," said Bolas. "To achieve this, we tried two unconventional approaches. The first was to use off-the-shelf LCD displays rather than microdisplays, gambling that the price performance curve would improve due to the proliferation of smartphones. The second was to optimize the optics design to provide a large but lightweight field of view, gambling here that graphics cards would soon allow for real-time distortion correction."

Bolas' hope that organizations would incorporate these Socket designs into commercial-off-the-shelf products is about to become a reality: HMDs will soon approach the experience of the Wide5 but with a price point of $300.

DO-IT-YOURSELF 3-D

ICT's MxR Lab gave away more than 100 of these FOV2GO viewers, do-it-yourself virtual reality kits that turn a smartphone into a 3-D viewing device, at the Institute of Electrical and Electronics Engineers Virtual Reality Conference in 2012. This smartphone-based technology has found its way into Army training prototypes. (Photo by David Nelson, USC ICT)

A PIVOTAL DEVELOPMENT

Oculus VR Inc. is a newly formed company, founded by former MxR lab assistant Palmer Luckey with Bolas' VR development company, Fakespace Labs Inc., acting as a founding advisor. Luckey sought out Bolas in 2011 and earned a position at ICT's MxR Lab through his knowledge of HMDs and enthusiasm for VR. After working on an assortment of low-cost immersive viewers and HMDs for ICT's MxR and Medical Virtual Reality Labs, Luckey further developed some of the MxR Lab's Socket open-source designs and configured a new HMD.

The result was the Oculus Rift™, a VR HMD and development kit that raised more than $2 million on crowd-funding website Kickstarter last summer with the promise of delivering a fully immersive virtual experience for roughly the price of a smartphone. A Feb. 17, 2013, article in The New York Times (**http://www.nytimes.com/2013/02/18/technology/oculus-rift-headset-aims-for-affordable-virtual-reality.html?pagewanted=all&_r=0**.) noted that using Oculus Rift is "like watching an IMAX screen that never ends. A snap of the head to the left instantly shifts the perspective inside the game in the same direction."

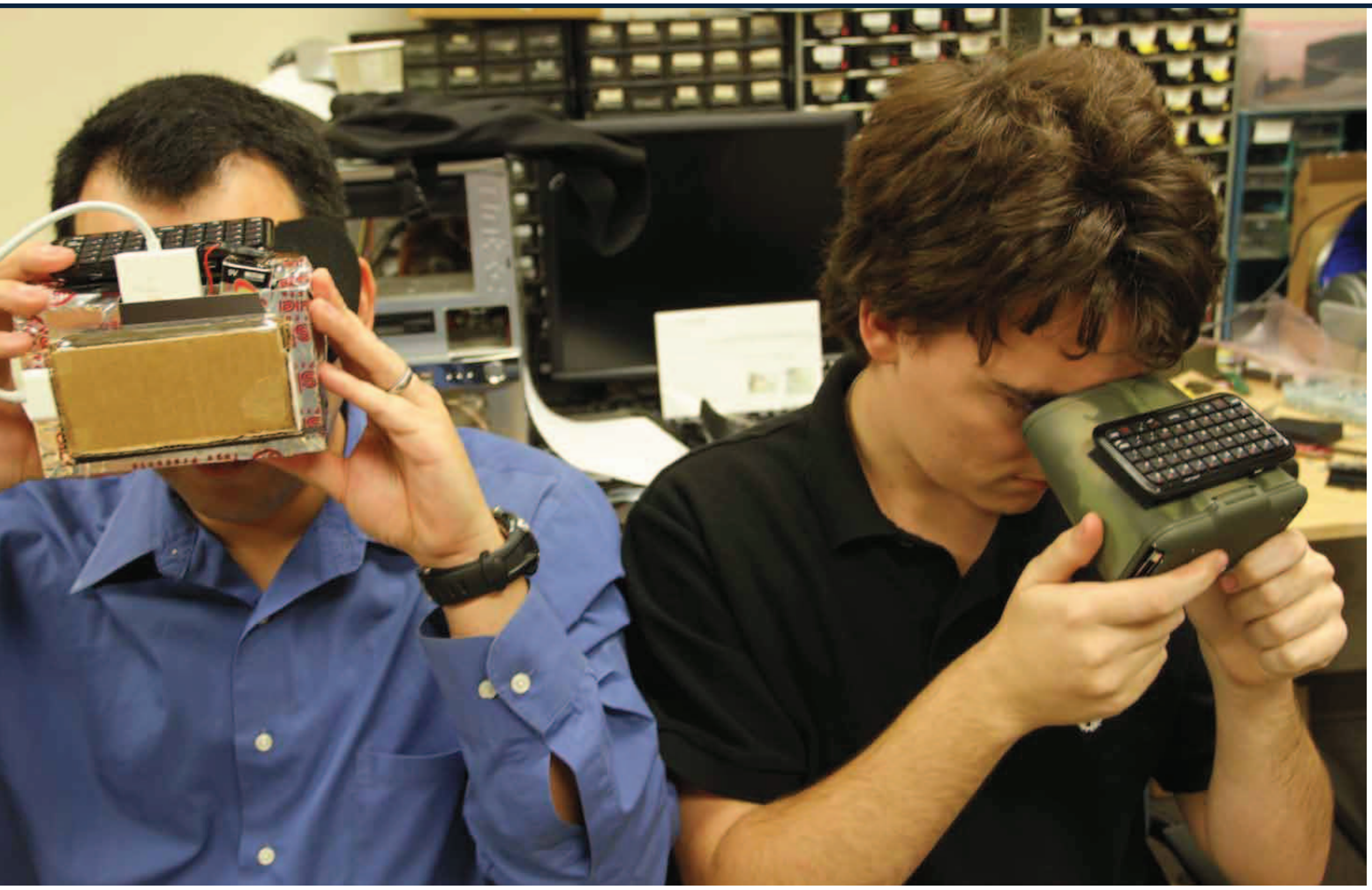
Headlines from the 2013 Consumer Electronics Show in Las Vegas hailed demonstrations of the Oculus Rift HMD as "amazing," "groundbreaking" and "mind-blowing." It provides capabilities lacking in most commercial VR offerings, including a wide field of view (110 degrees), stereoscopic lenses and 360-degree tracking.

The extent of immersion the Oculus Rift provides is pivotal on two levels. First, combined with content created by independent developers, it has the potential to revolutionize VR for entertainment purposes. More important, it illustrates how crowd sourcing and open-source development can make it easier to get better products into the hands of the warfighter, in less time and at a lower cost.

Consensus from reviewers is that the sense of immersion in the Oculus Rift exceeds anything commercially available. The MxR Lab is conducting research to quantify the value of a wider field of view and has found, for example, that it provides significantly better distance estimation in virtual environments.

PHONING IT IN

To jump-start its vision for market disruption, ICT's MxR Lab gave away more than 100 FOV2GO viewers, one of the first Socket designs, at the Institute of Electrical and Electronics Engineers



LOOKING TO THE FUTURE

Dr. David Krum (left), co-director of the MxR Lab at the USC ICT, peers into one of the lab's early HMD prototypes, while Palmer Luckey, a former lab assistant and later founder of Oculus VR Inc., works with a Hasbro My3D viewer modified with a Bluetooth keyboard. By developing open-source hardware and software, purchasing off-the-shelf components and leveraging industry collaborations, USC ICT aims to accelerate access to state-of-the-art HMDs costing as little as $300 each. (Photo by Branimir Kvartuc/AP Images for JP Selects)

Virtual Reality Conference in 2012. Winner of the conference's best demo prize, these smartphone-based immersive viewer designs have found their way into Army training prototypes as well as classes at Columbia University, and into the hands of VR hobbyists.

"Smartphones are essentially computers," said Bolas. "They are great for VR training because they are portable, can track motion, and their cameras allow for augmented reality—adding virtual objects in the real space."

Initially made of foam core and a set of $5 lenses, the FOV2GO enables a wireless 3-D experience using little more than the smartphone most people already have in their pockets. To begin their virtual experience, users need only assemble a viewer using a prefabricated kit and insert the phone into it. The MxR Lab has posted plans on its website, along with software by Perry Hoberman, a professor in USC's School of Cinematic Arts, so that anyone who is interested can download them to enable 3-D stereoscopic video and create a do-it-yourself HMD and immersive experience.

"We are excited to see what people have done and continue to do with this kit," said Bolas. "We see the contributions made from experts and enthusiasts alike as essential to improving the system and hopefully transitioning it to market so it can be more widely used."

JUMPING INTO TRAINING

Army instructors have recognized the potential for using these new technologies

> "WE'VE HAD LEADERS COME TO OUR LAB LAMENTING THE HIGH COST OF HMDS. WE DECIDED THE BEST WAY TO INFLUENCE THE INDUSTRY WAS TO DISRUPT IT BY RELEASING A NUMBER OF OPEN-SOURCE DESIGNS."

to enable realistic virtual training in a variety of settings.

In 2012, ICT delivered a proof of concept for the Army jumpmaster course at Fort Benning, GA. In collaboration with training personnel with the 1st Battalion, 507th Parachute Infantry Regiment, ICT's team designed a tool for mobile devices that allowed trainees to review and rehearse the jumpmaster personnel inspection sequence. Students can follow a sequence demonstrated by a virtual Soldier, augmenting hands-on classroom instruction received during the intensive course. The system also allows the user to pause and re-watch sequences, zoom in on the equipment, and review nomenclature, common deficiencies and other information.

Bolas and the MxR Lab are also working with the Defense Advanced Research Projects Agency on a project exploring the use of portable headsets and tablets to create immersive interfaces that enable users to feel as if they are surrounded by a large data set; thereby they might find it possible to distill new meaning from those data.

SHARING RESEARCH

Rather than attempt to protect his lab's technologies through patents and licensing agreements, Bolas and his team at the MxR Lab leveraged the open-source philosophy of sharing research.

"We are embracing the dissemination of our academic research through the open-source and crowd-sourcing culture," he said.

"It is widely accepted that government research dollars fuel technological advancement for industry," said Bolas. "It is fantastic to see that through open-source designs, industry can make this technology available to the government at a dramatically reduced price point."

CONCLUSION

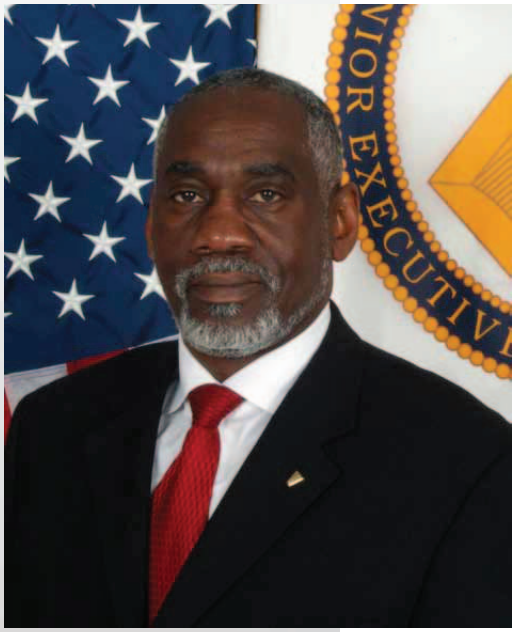
Twenty years after the promise of fully immersive systems emerged, the capabilities have now arrived and are increasing at exponential rates. Improvements to training can be implemented immediately, at significantly lower cost. Portable systems that can allow training anywhere, anytime are now becoming a reality.

Such systems could enable fully immersive virtual training scenarios, lifelike simulations, and augmented environments and interactions. Future research advances and technology transitions in HMDs open up the potential for whole new ways of interacting with computers, including discovering novel possibilities for their use.

Coupled with an increased use of open-source development and crowd sourcing, Army research and development efforts are enabling commercial capabilities and paying dividends in the form of new technologies that improve mission readiness while cutting costs.

DR. RANDALL W. HILL JR. is executive director of USC ICT, an Army-sponsored university-affiliated research center that conducts basic research and advanced prototype development to support innovation in simulation and training. Hill graduated with a B.S. from the United States Military Academy at West Point and served for six years as a commissioned officer in the Army, with assignments in field artillery and military intelligence. He earned his M.S. and Ph.D. in computer science from USC. Hill is a member of the Association for the Advancement of Artificial Intelligence and serves on the Board on Army Science and Technology of the National Academies.

MS. ORLI BELMAN is the public relations and projects manager at ICT. She has a B.A. in East Asian studies from the University of California, Los Angeles and an M.S. in journalism from Columbia University.



$AVING on SERVICES

A conversation with Mr. Tommy L. Marks on better buying power in the Army's single largest category of contracts spending

Mr. Tommy L. Marks is senior services manager in the Office of the Deputy Assistant Secretary of the Army for Procurement (DASA(P)). Previously, he was executive director for the Logistics Civil Augmentation Program (LOGCAP), under which private-sector contractors provide a broad range of logistical and life support services to U.S. and allied forces during combat and training operations.

Marks, a member of the Senior Executive Service since January 2011, has more than three decades' experience in contract operations and logistics management, including 24 years of service in the Army. He is a recipient of the Civilian Meritorious Service Award. Marks holds a B.S. in health and physical education from McNeese State University, an M.S. in acquisition management from the Florida Institute of Technology, and an M.A. in national security and strategic studies from the U.S. Naval War College.

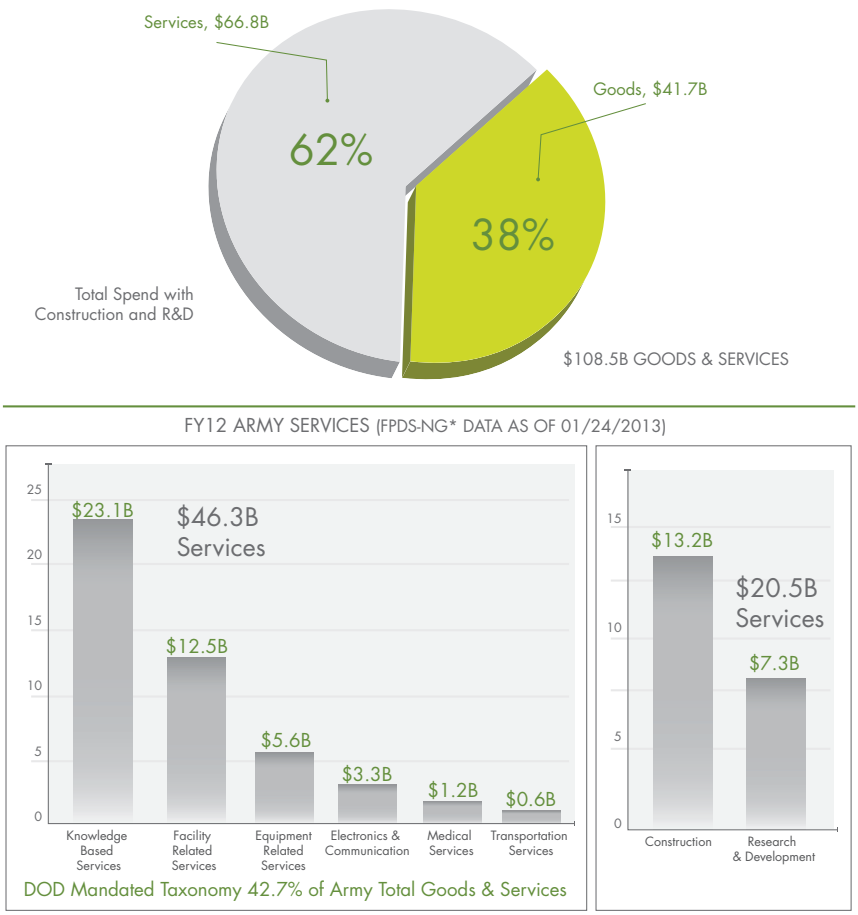
Mr. Kris Osborn, formerly a highly qualified expert for the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)) Office of Strategic Communications and now a staff correspondent for Military.com, had the opportunity to ask Marks in February about the impact on services contracting of the Better Buying Power (BBP) initiative led by Mr. Frank Kendall, undersecretary of defense for acquisition, technology and logistics (USD(AT&L)) since May 2012. Here is their discussion.

Q. Isn't services contracting a huge amount of the overall percentage of the Army's spending on contracts?

DRIVING EFFICIENCIES

Under BBP, commands assess their mission requirements and then determine where they can achieve efficiencies without degrading capabilities. Here, a route clearance patrol of Joint Task Force (JTF) Empire conducts operations in southern Afghanistan. During Operation Shrimp Net in July 2012, JTF Empire staff identified the need to move route clearance patrols from one area of operation to another, thus allowing for better assessment and allocation of engineer resources throughout Afghanistan. (Photo by COL John Elam, JTF Empire)

FIGURE 1



The Army's spending on services breaks down into eight portfolios, two of which—RDT&E and construction—are exempt from the BBP 1.0 initiative. Counting the other areas of services, the Army had achieved about $469 million in savings as of the end-of-the-year data call in 2012. (SOURCE: DASA(P))

* Federal Procurement Data System – Next Generation

A. Fifty percent of our spending is on service contracts; this funding is mostly in the OMA account [Operation and Maintenance, Army]. This runs all of our installations, among other critical functions such as repairing weapon systems. (See Figure 1.)

Q. What are some of the ways that you saw successes from the initial Better Buying Power effort?

A. The initial Better Buying Power effort tied back to the NDAA [National Defense Authorization Act] of 2002, which required DOD to put in place oversight for our services procurement. When you hear what Mr. Kendall talks about in terms of putting a senior services manager in place, the requirement comes straight from congressional mandates first. In 2010, the USD(ATL), Dr. Ashton Carter, established a DOD focus on Better Buying Power with 23 original initiatives. One of these initiatives was to improve services tradecraft, because acquisition of services represented nearly half of all DOD procurements.

In November 2010, the ASA(ALT) established the DASA for services (DASA(S)) to plan and oversee Army efforts to implement the "Improve Services Tradecraft" initiative. Mr. Jim Sutton, a former PEO Ammunition, was assigned as the DASA(S) and also designated as the Army's senior services manager (SSM). In May 2011, the secretary of the Army tasked the ASA(ALT) to develop a plan to optimize services acquisition and "leverage the Office of the DASA(S)" to coordinate the plan's development across the Army.

The secretary of the Army approved the Services Optimization Implementation Plan in September 2011. That plan documented the current services acquisition governance structure and review process that uses a DOD-defined portfolio approach for services acquisition. In January 2012, the DASA(S) was disestablished as an organizational efficiency, and the SSM functions were realigned under the DASA(P). Since the beginning of 2012, the offices of the SSM have been focused on executing and refining the management concepts initially defined in the 2011 Services Optimization Implementation Plan.

Q. Are there ways to find the contract mechanism that best suits a particular arrangement?

A. Overall, you'll hear some people talk about using specific contract types to get more BBP for services. However, that is only one way to improve services tradecraft. At the top level, improving services tradecraft is all about establishing

ENGINEERING OVERSIGHT

The U.S. Army Corps of Engineers (USACE) oversees about 260 construction, operations and maintenance, and service contracts in the south and west of Afghanistan. Architect and engineering services comprise part of the knowledge-based services portfolio, the single largest in the Army's services contracting taxonomy. (Photo by Karla Marshall, USACE)

appropriate acquisition management best practices in our services acquisition processes—similar to but not exactly the same as those we use to acquire weapon systems—while still being efficient and responsive. Doing this requires education, training and a transformation in culture by the commands that require services.

The predominance of requirements for services are developed and approved by commands and their staffs outside of DOD's and the Army's Acquisition Corps. Leading the services improvement efforts at OSD [the Office of the Secretary of Defense] is Mr. Dick Ginman, director of defense procurement and acquisition policy. And then, of course, that all filters down in the Army to the SSM to execute, under the direction of the DASA(P). I am his point person to execute the mission requirements that comply with DOD and Army goals to improve services tradecraft.

Q. In terms of what BBP was able to accomplish in the first several years, is there an example of cost avoidance or cost savings that jumps to mind?

A. Based on the guidance issued, a key part of this was all of the services establishing governance. We have the SSM's offices and portfolio coordinators on my staff. Then, in the field, we have the command service executives, general officers or Senior Executive Service members, in each of the requiring activities; they oversee everything that is being done to achieve savings or cost avoidance. In the field with them, we have DA-designated portfolio managers, people on selected commands' staffs who help us plan, track and execute the services oversight.

So what you are looking at is the requirements to support their missions. The commands actually provide us with projections and forecasts of what they believe they will be able to do to reduce requirements while still supporting their mission and without degrading their capabilities. At the AUSA [Association of the United States Army Annual Meeting and Exposition, in October 2012], the secretary of the Army noted that at that point, we had about $333 million in savings.

Basically what takes place is that the commands reported the requirements they had in FY12. They projected to save about $600 million with services overall. That is everything minus RDT&E [research, development, test and evaluation] and construction; BBP 1.0 exempted those areas.

LOOKING AT LOGISTICS

Installation-level logistics is an area ripe for consolidation of services and other efficiencies. Here, PFC Anthony Beeks, an automated logistical specialist with the 204th Brigade Support Battalion, 2nd Brigade Combat Team, 4th Infantry Division (2/4 ID), prepares to relocate food rations to a storage area at the Pinon Canyon Maneuver Site of Fort Carson, CO, Feb. 19. (U.S. Army photo by SSG Andrew Porch, 2/4 ID)

So in our end-of-the-year [2012] data call, what we were able to say, based on the commands' reporting, is that we had about $469 million in savings. The key piece is oversight and tracking the requirements and savings.

Q. Was LOGCAP a part of this?

A. When the SSM started looking at this, every type of service contract was reviewed, which included looking at the overseas contingency contract and base dollars. So initially that [savings] figure first put on the table was about $11 billion. In early 2012, the Army directed that the SSM should not oversee overseas contingency operations (OCO) dollars. Then the reality was, when we took out OCO funding, we have about $4.2 billion in service contract savings, using the base dollars.

Q. As you look across the first few years of BBP, you see hundreds of millions in savings. To what do you attribute that? More enterprising contract approaches?

A. I can tell you that 85 percent of the savings are due to changes in requirements. That means commands are taking a look at that mission and then determining what it is going to take to support it. We have reduced savings on existing contracts. Commands do annual reviews of the requirements, which is much more intense based on where we are now and the [fiscally uncertain] environment that we are in. This is where we are seeing the greatest savings.

Q. As requirements are changed, have you captured data on any savings you didn't previously report?

A. Not at this point. What we're seeing reported all makes sense. Ultimately, we could tell the field to reduce their contracts by 30 percent. The reality is, they won't know what to cut until they go back and look at their mission needs [with greater scrutiny]. Commanders look at requirements and assess what they can take off and what they cannot.

Q. Is there anything with BBP that we need to emphasize?

A. As we look at it and see how things have evolved to BBP 2.0, the base criteria that Mr. Kendall has put out are still there. In the tradecraft piece, there are about seven or eight other areas that they look at. "Trip wires" is a term that the Navy coined; it is synonymous with requirements validation at the appropriate level with the right senior leader oversight. They ensure that the requirement is validated and that there is a mission associated with it. So the Army does the same thing; we have been doing this since 2003, supporting the warfighter.

Acquisition review boards have been established by our major commands on the services side. It is standard on the requirements side. There are defense acquisition milestones on the acquisition side; we don't have that on the services side. We have acquisition review boards at each of the major command levels. That [output] comes up to our level. The commands' services acquisition strategies valued at $250 million and above have to come to my office for approval. As the contract value increases, the approval level increases. Contracts valued at $500 million and above require the DASA(P)'s approval, and at $1 billion and above, we have to send them to OSD, Mr. Ginman, for approval.

Q. What about market research?

A. A major thing that we have to put in place is, really, we have to do much better market research. We are looking at a more holistic approach to help us identify requirements that potentially could be consolidated. That ties into what the Army has today in terms of their legal contract, which was put together by the

INSTALLATION SUPPORT

The Army uses its services contracting dollars, mostly from the Operation and Maintenance, Army account, to run all of the installations, including dining facilities (DFACs) such as the Lancer Consolidated DFAC on Joint Base Lewis-McChord, WA, scheduled to reopen May 1 after being closed for 18½ months while 2nd Brigade, 2nd Infantry Division Soldiers were deployed to Afghanistan. (U.S. Army photo by SGT Sarah E. Enos, 5th Mobile Public Affairs Detachment)

U.S. Army Sustainment Command: logistics at the installation level, where you do maintenance and transportation. There are about 70 of those, called DOLs—directors of logistics—whereby each one had their own set of contracts. So you can imagine that each contract office was doing its own thing. This is in place today as our first enterprise solution to try to get more efficient. Sustainment Command at Rock Island, IL, projects about $19 million in savings.

Q. With BBP 2.0, is there anything you are looking forward to?

A. For 2.0, it is really to continue the way ahead with market research and identifying requirements that we can really be more efficient with. This relates to strategic sourcing and opportunities and another phase of where the department wants us to look at things. I will tell you we are doing strategic sourcing, but we have not been able to tell that story yet.

Q. Small business is a part of this strategy, no?

A. Yes, it is, because small business is really important—those requirements below $250 million. A key component is the opportunity of small business. We've got some mandates from OSD on how to increase small business opportunities. In fact, we work closely with the small business office and Ms. Tracy Pinson; you have the opportunity on the subcontractor side, based on the dollar threshold. There's also a way ahead to direct small business as a prime, and in one instance since I have been here, INSCOM [U.S. Army Intelligence and Security Command] has put together a requirement. Their acquisition strategy and their large business competition, their market research show us that there are enough small businesses out there that can compete and have the capability to do the job. The overall contract management and administration procedures are designed to put the right process in place to identify the right strategic sourcing and potential opportunities.

Q. What is EAGLE?

A. EAGLE is the name for the Enhanced Global Logistics Enterprise program. It is the Army's transformational initiative to transfer installation logistics management and acquisition from U.S. Army Installation Management Command to U.S. Army Materiel Command to achieve greater efficiency and cost savings. This program is a good example of BBP in action. EAGLE will provide Armywide, global, installation logistics service with locally tailored task orders to replace former multiple, separate installation-level contracts. The program has a five-year acquisition strategy valued at up to $23 billion. It is now in place with initial task order solicitations underway. AMC projects up to $19 million in cost avoidance over the life of the program. A total of 112 basic ordering agreements will be executed for task order competition among 65 small businesses and 47 large businesses.

I and my staff are fully committed to executing the Army's Services Optimization Implementation Plan, DOD's Better Buying Power initiative and related congressional mandates. All of the objectives in these directions are about three general imperatives: increase efficiency, improve services delivery and lower costs. In these times of fiscal uncertainty and reduced funding, it is especially important that we get these things right. Doing these things is imperative if we are to provide truly essential services to our Soldiers and their families and to maintain our installations and equipment.

For more information, contact Mr. Tommy L. Marks at ***tommy.l.marks.civ@mail.mil****.*

SUPPLYING THE SOLDIER

LCAAP is the only one of the eight current government-owned contractor-operated ammunition facilities owned by the Army that produces small-caliber ammunition for the Army and the other services Here, SGT Rachel Ettesvold of the 181st Chemical Company performs final checks and loads ammunition into an M2 .50-caliber machine gun mounted on the Remote Weapon Station of a Stryker Nuclear Biological Chemical Reconnaissance Vehicle, May 9, 2012, at Yakima Training Center, WA. (Photo by SGT Micah VanDyke, 28th Public Affairs Detachment)

COMPETITION CASE STUDY

How the ammunition enterprise obtained the best value for the Army's government-owned contractor-operated small-caliber ammunition plant

by Ms. Kristin Comer, Mr. Joseph DeFino, Ms. Kimberly McCleerey, Mr. Robert Kowalski and Mr. William Sanville

With an estimated value of more than $8 billion, the procurement for the production of small-caliber rifle ammunition and the operation, maintenance and modernization of the Lake City Army Ammunition Plant (LCAAP) in Missouri had to be competitive. It was up to the government to set the stage for a fair and competitive acquisition.

LCAAP is one of eight current government-owned contractor-operated ammunition facilities owned by the Army, and the only one producing small-caliber ammunition for the Army and the other services. The incumbent contractor, Alliant Techsystems Operations LLC, had been producing ammunition and operating the facility since 1999. In 2005, while the Army was heavily engaged in Operations Enduring Freedom and Iraqi Freedom, the contract for the production of small-caliber ammunition at LCAAP was approaching the end of its 10-year period of performance (1999-2008). Ongoing operations in theater had shifted to stability and counterinsurgency missions. This, combined with more predeployment training, demanded that the facility produce small-caliber ammunition at production levels not seen since the early 1970s. (See Figure 1 on page 91.)

The project manager for maneuver ammunition systems (PM MAS) of Program Executive Office Ammunition (PEO Ammo) recognized that it would be necessary to modernize capital equipment, expand capacity and improve the infrastructure at LCAAP, which was built in 1942, to keep pace with the immediate and unremitting demand for small-caliber ammunition. HQDA supported these actions. The plant had seen little or no significant modernization in its more than 60 years of existence. Moreover, modernizing the facility would reduce the cost to produce ammunition through greater automation, improved material handling and increased use of information technology.

In August 2005, the Army took its first steps to remedy the situation with an initial investment of more than $50 million to improve the plant, the first installment in what would be a total investment of more than $276 million over the next

KEEPING UP THE AMMO FLOW

In August 2005, the Army made a $50 million initial investment to start improving LAACP. Over the next seven years, the investment continued, totaling more than $276 million. Here, M855 5.56 mm ammunition leaves the cartridge tip identification operation and flows into a buggy. (Photo by William Melton for PM MAS)

seven years.

The incumbent operator had also invested in the facility as part of its contract. Unfortunately, the result was mixed ownership of intellectual property and capital equipment, which would provide a significant challenge for any new offeror to overcome. Thus the potential for real competition was severely limited, which was unacceptable to the government.

PM MAS, along with its partners, the Joint Munitions Command and the U.S. Army Contracting Command, embraced the spirit of Better Buying Power (BBP) as outlined by the Office of the Secretary of Defense and implemented by the assistant secretary of the Army for acquisition, logistics and technology.

COMPETITIVE STRATEGY

The incumbent, operating at high volumes while further expanding and modernizing the facility, appeared to have a distinct competitive advantage that the government concluded would discourage other competitors from bidding. Rather than trying to take away a company's fairly earned competitive advantage, PEO Ammo and its partners strove to encourage competition and to ensure a fair and equitable source selection.

The emerging strategy contained four key steps in two phases:

Preparation Phase

Step 1: A four-year extension to the current contract. The purpose of the extension, which was awarded in March 2009 with an ordering period through September 2012, was twofold: to reduce the overall risk of initiating and transitioning to a new contract and contractor during wartime operations, when demand was at record high levels; and to provide additional time for ongoing modernization efforts to mature, effectively allowing the government a much-needed opportunity to better prepare for a full and open, best-value competition.

Step 2: Obtain the necessary intellectual property and capital equipment. With mixed and unclear ownership, rights to the intellectual property and capital equipment were likely to be fiercely debated during the competition. This increased the risk of a protest to an unacceptable level; or, in a worst-case scenario, the procurement would attract no other bidders.

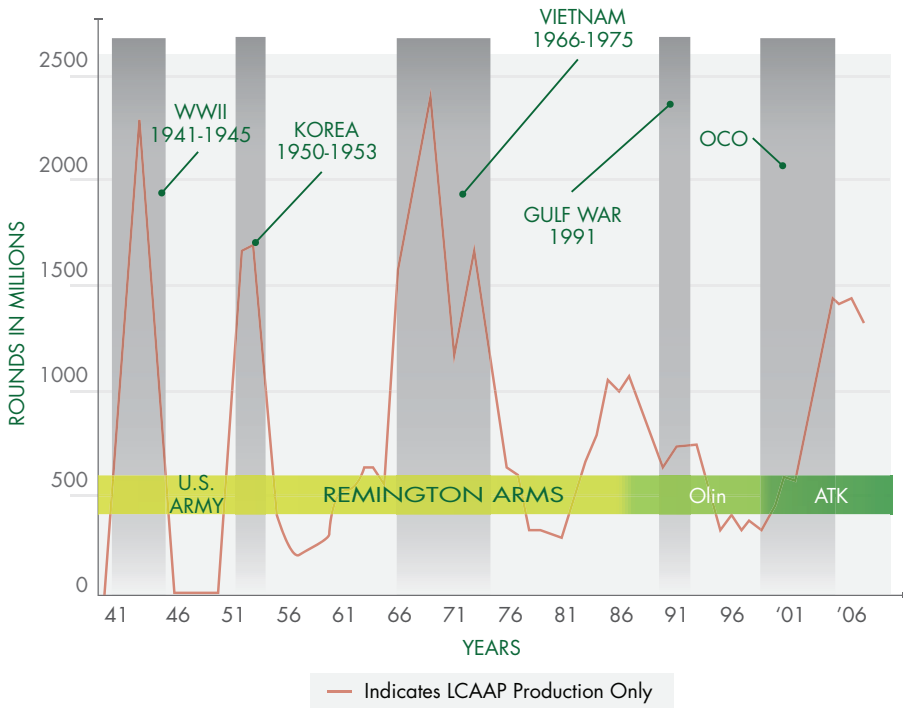
To resolve the mixed ownership, the incumbent contractor and the government reached a settlement whereby the government ultimately received all necessary hardware and intellectual property rights for the areas in question. (The new LCAAP contract included revised clauses with regard to data rights that avoided mixed ownership in the future.)

After successfully concluding Steps 1 and 2, the government initiated the execution phase.

Execution Phase

Step 3: Make relevant information available to potential offerors as early as possible and to the maximum extent

FIGURE 1



The years from World War II to the present-day overseas contingency operations (OCO) have seen peaks and valleys in LCAAP's production of small-caliber ammunition for the U.S. military. (SOURCE: PEO Ammunition)

ENCOURAGING INVESTMENT

In exchange for commercial use, offerors responding to the contract solicitation were required to propose projects for improving the facility. The solicitation gave the government unlimited rights to any contractor investment in the plant. Here, .50-caliber cartridges exit the waterproofing machine tied to the end of the new Manurhin loaders. (Photo by Trevor Beyeler, ATK mod project engineer)

practical. While the government had taken steps to ensure a fair and equitable competition, it was also of utmost importance that industry recognized this. To communicate that principle, several actions were necessary to assure industry that, although the incumbent might inevitably have an undeniable competitive advantage, it would not be an unfair advantage.

To that end, the government held four industry days, three of which included plant tours. A virtual technical library was created to securely share available documentation with potential offerors. This virtual library contained more than 800 documents, including information on environmental and utility matters, schematics, manuals, handbooks, etc. In addition, an on-site library was established at LCAAP to make available documents that were considered sensitive or were unavailable in digital format. All solicitation documentation was posted in a draft format before being formally released, with ample time throughout for interested parties to review, ask questions and provide feedback.

Step 4: Incentivize commercial use in the plant, creating a win-win for the contractor and the government. While allowing the contractor to use a government-owned facility for commercial purposes in return for government benefit is not a new concept, the approach used in the LCAAP solicitation was truly novel and maximized benefits to the government.

As done historically, the successful offeror would be allowed to use the plant to produce and sell small-caliber ammunition commercially, so long as the commercial endeavors did not interfere with Army operations. However, and uniquely, the government included the amount of consideration and the plan for its use as an evaluation criterion, thus maximizing the opportunity for contractor investment and innovative projects.

This became all the more important as demand has recently increased in the commercial market. The Army's $276 million investment for modernizing and making the plant more efficient, coupled with the demand from overseas operations, made additional capacity available for commercial use.

In exchange for commercial use, offerors responding to the solicitation were required to propose projects and dollar amounts for improving the facility or production capabilities, or reducing product or overhead prices, in a manner that benefited the government. This would allow the Army to leverage the investment in the facility and to benefit from the commercial work that the successful offeror would be permitted to perform. The solicitation explicitly stated that the government would have unlimited rights to any contractor investment in the plant.

CONTRACT AWARD

The solicitation was released in December 2011, with proposals required in January 2012. The formal source selection resulted in the award of a best-value contract on Sept. 28, 2012. The initial award included a five-year base, with a two-year option

exercised at the time of award. The contract also includes up to a three-year award term based on the contractor's performance.

The taxpayer is expected to save more than $900 million over a 10-year period of performance; the Army and other services will save as much as $72 million in FY13 alone. These calculations are based on a comparison of the new prices resulting from competition with historical prices for the projected "buys" during the life of the contract. They do not include the substantial value the government will receive as a result of the contractor's commercial use of the facility. The projected savings, coupled with the benefits of commercial use, far outweigh the Army's investment in modernizing LCAAP.

CONCLUSION

This real-world application of the BBP tenet "Promote Effective Competition" demonstrates how a holistic, multidimensional approach can ensure a truly competitive environment and deliver significant results for the government. Establishing a level playing field for the LCAAP contract required time, hard work and significant upfront investment, but in saving more than $900 million, the Army more than recouped its investment for the government and, more important, the American taxpayer.

For more information, contact Ms. Kristin Comer at ***kristin.l.comer.civ@mail.mil*** *or 309-782-3491.*

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MR. ROBERT KOWALSKI is the business manager for PM MAS, Picatinny Arsenal. He holds a B.S. in chemical engineering from Lehigh University and an M.S. in systems management from the Florida Institute of Technology. Kowalski is Level III certified in program management; systems engineering; and production, quality and manufacturing. He is an AAC member.

MR. WILLIAM SANVILLE is the deputy PM MAS, Picatinny Arsenal. He holds a B.S. degree in engineering from the University of Massachusetts – Lowell and earned an M.S. in technology management from the University of Pennsylvania Wharton School, where he was named a Moore Fellow. Sanville is Level III certified in SPRDE – systems engineering and an AAC member.

BIRD'S EYE VIEW

LCAAP, near Kansas City, MO, was built in 1942 and received little modernization until 2005. (Courtesy of Steven Sanders, Sanders Photography)


US

ONE-STOP *EFFICIENCY*

Two tactical communications defense contracts provide more than the sum of their parts

by LTC Greg Coile, Ms. Danielle Kays and Mr. James Sawall

The Army is leveraging two tactical communications contracts to realize significant cost savings, even as it enables industry to fill needed mission requirements more efficiently and effectively.

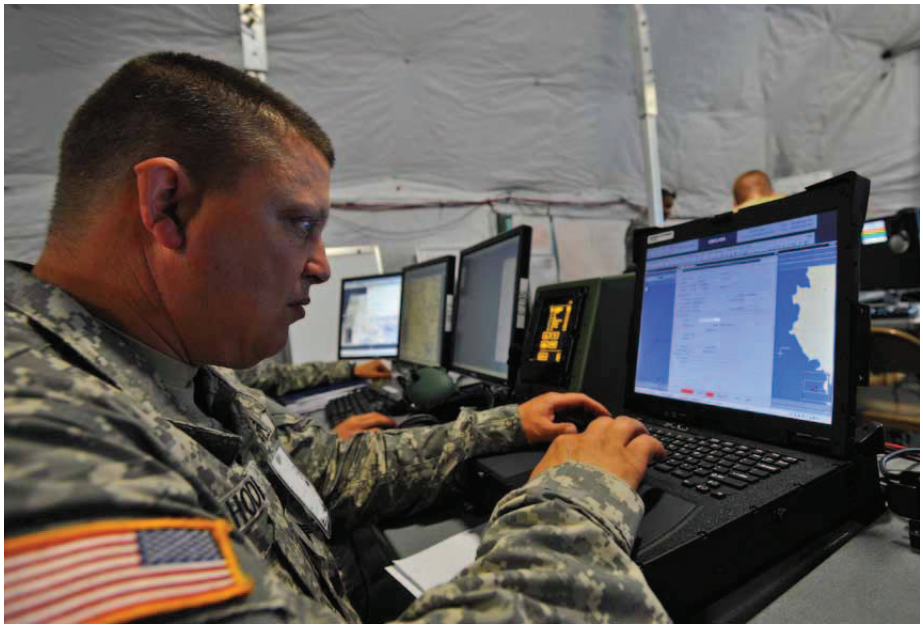
What the new Global Tactical Advanced Communication Systems (GTACS) and Common Hardware Systems (CHS) contracts have in common is that they both are intended to deliver tactical mission command and communications capabilities to programs of record (PORs); their purpose is to improve interoperability, compatibility and sustainability and to lower life-cycle costs on the battlefield by standardizing and centralizing acquisition of commercial-off-the-shelf (COTS) technology and non-developmental items. Both contracts are available to all DOD customers.

The GTACS and CHS contracts are managed by the project manager for Warfighter Information Network – Tactical (PM WIN-T) within the Program Executive Office Command, Control and Communications – Tactical (PEO C3T). PM WIN-T thus is poised to be the preferred provider of tactical COTS information technology (IT) for the Army modular force. PM WIN-T provides the communications network (satellite and terrestrial) and services that allow the Soldier to send and receive information in order to execute the mission.

GTACS and the CHS program complement each other, together delivering comprehensive tactical mission command and communications POR and theater-provided equipment capabilities to fill the requirements of Army units worldwide. PM WIN-T will use these

SECURE COMMUNICATION

The GTACS contract is one of the largest contracts that DOD plans to issue within the next few years. It covers the hardware, software, equipment and data necessary to support the PEO C3T with an emphasis on tactical SATCOM, such as this Secure Internet Protocol Router/Non-secure Internet Protocol Router Access Point satellite terminal. (Photo by Amy Walker, PEO C3T)



PACKAGING SERVICES

Managers of large PORs, such as PM WIN-T and PM Distributed Common Ground System – Army, use the CHS program to fulfill their multiyear sustainment strategies, taking advantage of bundled services to control costs across the product life cycle. (Photo by SGT Thaddeus Harrington, 29th Combat Aviation Brigade Public Affairs)

contract vehicles to provide economies of scale, lowering prices and total life-cycle system management costs.

A FAR-REACHING CONTRACT

The GTACS contract, awarded in October 2012, has a $10 billion ceiling, making it one of the largest that DOD plans to issue within the next few years. GTACS provides one-stop shopping for a wide variety of hardware and the services to support it. The contract's range, flexibility and consolidation capabilities will enable the Army, DOD and other agencies to spend more efficiently and to provide the right capability rapidly to the battlefield.

GTACS provides centralized, competitive contracting to support PEO C3T in acquiring state-of-the-art solutions. PEO C3T develops, fields and supports fully networked capability sets, connecting the fixed command post to the commander on-the-move to the dismounted Soldier. GTACS covers the necessary hardware, software, equipment and data, with an emphasis on tactical satellite communications (SATCOM). During the five-year ordering period of the GTACS contract, the needs of PEO C3T are expected to evolve in response to emerging threats and changing battlefield requirements, and the GTACS contract is designed to provide the flexibility and responsiveness required to support the PEO C3T mission.

Slated as a replacement for the $5 billion World-Wide Satellite Systems (WWSS) contract, GTACS is an indefinite-delivery, indefinite-quantity (IDIQ) contract. The GTACS contracting vehicle is even more flexible, efficient and competitive than WWSS in delivering capability while balancing Soldier requirements and taxpayer resources.

GTACS is a base contract that PM WIN-T's product manager for SATCOM will use to issue delivery and task orders. Instead of awarding multiple contracts, the Army can now efficiently award numerous delivery and task orders from a single contract. The GTACS source selection process resulted in an award to 20 prime contractors, compared with six on the WWSS contract. As primes, they can compete for the broad spectrum of work anticipated under the contract.

The increased number of vendors, both small and large contractors, is expected to provide the best solutions based on requirements. This large, multiple-award IDIQ contract type is expected to reduce administrative redundancy and provide cost savings as a result of increased competition.

Inherent within its design, GTACS includes a variety of contractors that can support any task the government requires, so long as it is within the scope of the Performance Work Statement. It allows for shortened timelines for awarding delivery and task orders, which in turn can save the government money while providing critical equipment and services to the Soldier in a timely manner.

GTACS was designed to manage a program's entire life cycle and to have a broader scope than WWSS, including tactical radios or any other equipment that PEO C3T needs to complete its mission. The contract provides for three functional areas: research and development, production and deployment, and sustainment and logistics. This means that no matter where a capability is in the acquisition

life cycle, the program office can use the GTACS contract to support its requirements. GTACS simplifies and consolidates the entire process by enabling the customer to develop a capability, then produce, test, field and sustain that capability with one contract.

This overarching coverage provides greater flexibility over the WWSS contract by including the research and development piece; thereby the program offices can cover the product's entire life cycle. WWSS could be used only with production offered commercially, which then could be covered through sustainment. GTACS offers the increased flexibility to include commercial and noncommercial items from research and development all the way through to disposal.

INCREASING ECONOMIES OF SCALE WITH CHS

Since 1987, the CHS program has been providing state-of-the-art computer and networking equipment for the battlefield. It offers a single interface for the Army Materiel Enterprise to the COTS IT industry to identify technologies that meet current capability gaps and follow-on requirements. Product Director (PD) CHS collaborates across the enterprise to develop solutions that satisfy requirements of multiple PEOs and PMs, and thereby reduce inefficient single-point-solution procurement, life-cycle sustainment costs and field-support manpower requirements. PD CHS implements large consolidated buys and economies of scale to reduce cost and accelerate procurement.

RUGGED EQUIPMENT

As a component of its services, PD CHS ruggedizes hardware and provides environmental testing to ensure that equipment meets operational standards. Based on environmental and mission requirements, customers can choose from three levels of ruggedization for their equipment, such as this Pocket-sized Forward Entry Device, which is used in fire support operations. (U.S. Army photo by SGT Michael J. MacLeod, 1st Brigade Combat Team, 82nd Airborne Division Public Affairs)

PM WIN-T THUS IS POISED TO BE THE PREFERRED PROVIDER OF TACTICAL COMMERCIAL-OFF-THE-SHELF INFORMATION TECHNOLOGY FOR THE ARMY MODULAR FORCE.

CHS increases efficiencies by applying a command, control, communications, computers, intelligence, surveillance and reconnaissance enterprise-centric approach to streamlined technology insertions, saving execution time and accelerating delivery schedules at the point of need. It also delivers a common, global-reach, tactical COTS IT sustainment strategy and total life-cycle systems management capability, including regional depot support, extended warranties, rapid turnaround times and configuration management.

What distinguishes CHS from other contracts is that, through a single technology insertion or contractual modification, CHS can design, develop, modify, ruggedize, environmentally test, procure, sustain and provide configuration management under a single part number. The bigger POR managers such as PM WIN-T, PM Mission Command and PM Distributed Common Ground System – Army use CHS to fulfill their multiyear sustainment strategies, as bundling these services allows the PORs to control costs across the product life cycle.

In collaboration with its prime contractor, CHS will design and develop a system upfront to meet customer requirements without having to charge for nonrecurring engineering to research, design, develop and test a new product. CHS ruggedizes hardware at three different levels and provides the environmental testing to ensure that the equipment meets its operational standards. Customers can choose a level of ruggedization based on environmental and mission requirements.

Sustainment is typically the largest life-cycle cost factor to consider in purchasing equipment for U.S. forces. The CHS contract provides an efficient means to maintain the hardware: a five-year warranty covering all hardware for defects in material or workmanship and for "fair wear and tear." Warranty repairs or replacements are accomplished within a 72-hour repair turnaround at worldwide CHS regional support centers (RSCs). This approach gives customers the peace of mind of having a single number to call and a single turn-in point.

Configuration management is a critical function of the CHS package; it is provided to ensure cross-POR baseline management and system interoperability. CHS manages customers' unique configurations and program baselines to ensure that the precise configuration is purchased in all subsequent buys, and that it can be used and integrated into other systems exactly as the initial equipment had been.

In the past, when purchasing large quantities of equipment from multiple contractors at different times, it was nearly impossible to receive the exact equipment in the same configuration that was originally purchased. That, in turn, can cause future integration, interoperability, training and user difficulties that increase cost. CHS also manages items reaching the end of life, and works with industry providers and PORs to ensure that replacement items fit within the configured design and operating environment. These efforts increase consistency for greater efficiency, as well as offering significant cost avoidance.

CHS customers also benefit from theCHS catalog. Once CHS places items onto the contract, that piece of hardware is available for purchase for the life of the contract, so the customer can buy it as many times as needed without going through a recompete for future procurement. If the customer does not need the benefits and services provided by CHS, other contract vehicles are available, such as PEO Enterprise Information Systems' Computer Hardware, Enterprise Software and Solutions (see related article on Page 120), or the U.S. Army Communications – Electronics Command's Rapid Response, that might provide a better fit.

CONCLUSION

In a unified effort, PM WIN-T will leverage GTACS and CHS as much as possible to deliver and support needed capabilities, specifically with respect to supporting the Army's Network Integration Evaluations and Capability Set development, and in delivering command post and mounted computing environments.

The GTACS and CHS teams envision further economies of scale by looking at opportunities to combine purchases, not just within PM WIN-T, but throughout PEO C3T and other defense organizations. PM WIN-T is also looking at ways to leverage and extend the CHS warranties and WIN-T's RSC infrastructure for customers looking to use the GTACS vehicle. This strategy could provide tremendous cost savings through economies of scale, as there can potentially be one uniform logistics strategy for the entire PEO.

To remain relevant, ahead of its enemies and prepared for future operations, the Army must continue to deliver improved battlefield capability in the most

cost-effective manner possible. With this in mind, GTACS and CHS are designed to provide innovative and comprehensive solutions to increase the Army's buying power while providing the latest technologies and lasting support to the Soldier.

For more information, go to the PEO C3T website at ***http://peoc3t.army.mil/c3t/****, or contact the PEO C3T Public Affairs Office at 443-395-6489 or* ***usarmy.APG.peo-c3t.mbx.pao-peoc3t@mail.mil****. For additional information for DOD employees, go to milWiki at* ***http://go.usa.gov/4Qvk*** *(Common Access Card login required).*

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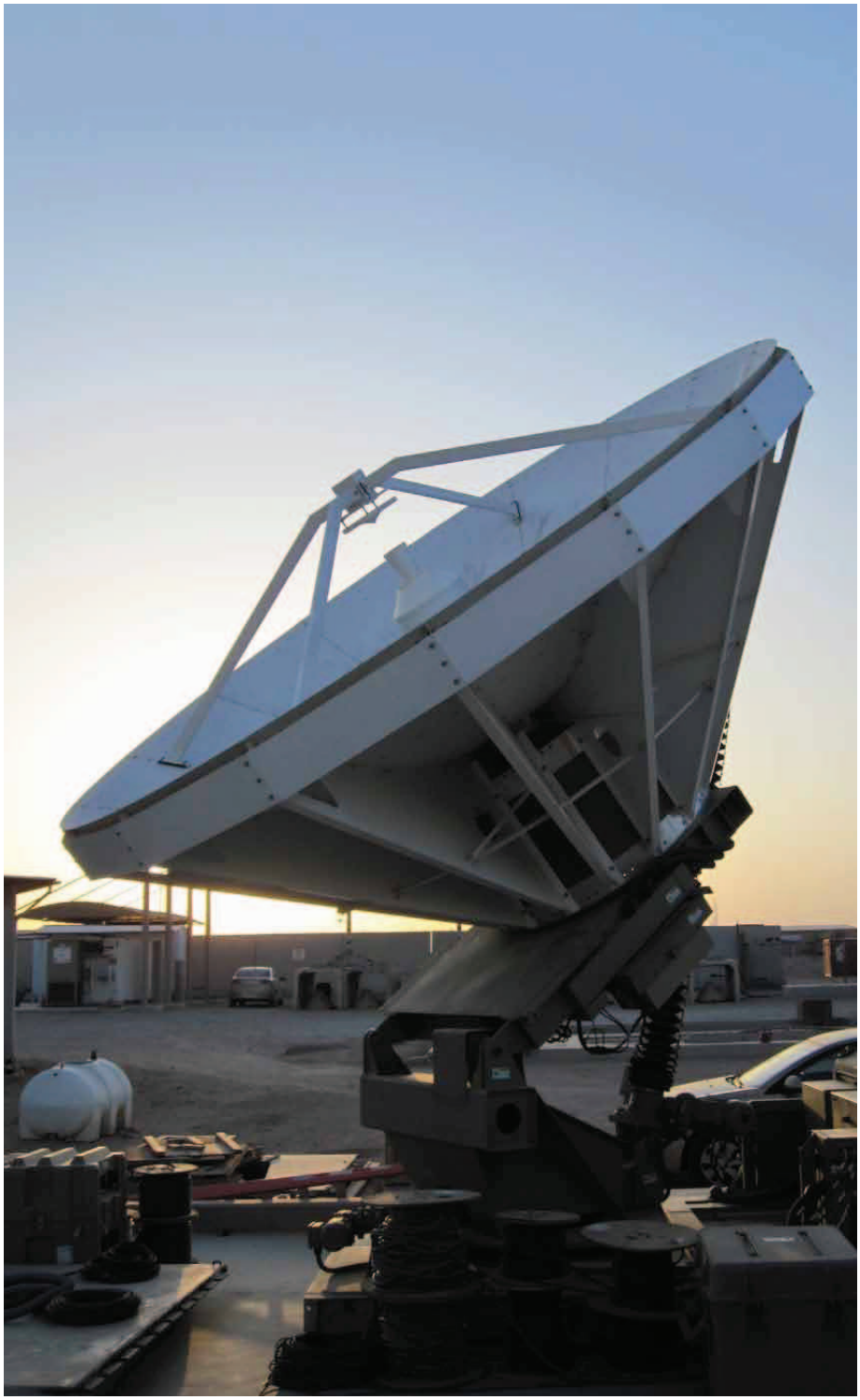
MS. DANIELLE KAYS is PM WIN-T's PD CHS. She holds a B.S in systems engineering from the United States Military Academy at West Point and an M.B.A. from Norwich University. Kays is Level III certified in program management and Level III certified in systems, planning, research, development and engineering (SPRDE). She is a member of the AAC.

MR. JAMES SAWALL is the assistant program manager for the Commercial Satellite Terminal Program and is responsible for management of the GTACS contract. He holds a B.S. in engineering science and an M.B.A. from Rensselaer Polytechnic Institute. Sawall is Level III certified in program management, Level III certified in SPRDE and a Certified Project Management Professional. He is an AAC member.



COVERING A WIDE SCOPE

The GTACS contract is managed by the product manager (PM) for SATCOM under PM WIN-T, which provides the Army's tactical communications network. PM SATCOM manages Deployable Ku Band Earth Terminals, shown here, among many other systems. (Photo by Marc Crudo, PEO C3T)

SAFER *and* SMARTER

Army achieves integration with industrial enterprise through innovative Better Buying Power contracting strategies

by Mr. Carmen Spencer, Mr. Don Barclay and COL John Lemondes

In January 2012, the U.S. Army Chemical Materials Activity (CMA), under the charter of the project manager for chemical stockpile elimination (PM CSE), completed a key mission milestone with the destruction of the chemical warfare materiel declared under the Chemical Weapons Convention (CWC).

In accomplishing this significant achievement, the CMA encountered many obstacles and recognized the need to challenge long-established contracting assumptions, approaching them with creative solutions. One such solution was to restructure the Chemical Demilitarization Program system contracts at the last four incineration-based facilities. This restructuring succeeded by aligning the contractors toward a common objective and sharing lessons learned, which in turn helped to reach the nation's destruction goals.

The approach that CMA implemented supports DOD guidance to the acquisition community on Better Buying Power (BBP) initiatives. The goal of BBP is to deliver better value to the taxpayer by improving the way the government does business. As a result of its contract restructuring, the Chemical Demilitarization Program was able to achieve the safest and most efficient demilitarization in the Army's history, completing the mission three months ahead of the CWC deadline with an overall projected cost avoidance to the taxpayer of approximately $6 billion. (See Figure 1 on Page 102.)

MISSION SCOPE

Destruction of the United States' chemical weapons stockpile, consisting of more than 30,000 tons of lethal liquid chemical agents in more than 3.4 million munitions and bulk containers stored at multiple sites, was a formidable challenge for the Army.

CLOSING OUT THE MISSION

The Tooele Chemical Agent Disposal Facility (TOCDF), UT, was built in the 1990s to facilitate the destruction of chemical agent-filled munitions, some of which had been stored at the depot since 1942. TOCDF was the last facility to complete its disposal operations; the last 155 mm mustard projectile was destroyed there on Jan. 21, 2012. (Photos courtesy of CMA)

In 1985, Congress authorized disposal of the nation's aging and deteriorating stockpile and identified the Army as the authority responsible for management of the construction, operation and closure of nine chemical demilitarization sites at storage locations around the country. It should be noted that the mission for destruction of the stockpile at two storage sites was later transferred to the Program Executive Office Assembled Chemical Weapons Alternatives (ACWA).

There were many unknowns at the outset of this mission regarding the condition of the munitions and chemical agents contained within them. This venture would be a first-of-its-kind operation, and initial cost estimates for the destruction of the chemical weapons stockpile were $2.1 billion. The entire spectrum of applicable federal, state and local environmental requirements was undefined. In addition, destruction technology at full scale was not yet proven, and little industrial experience existed for the task beyond that gleaned from the Army's research and development.

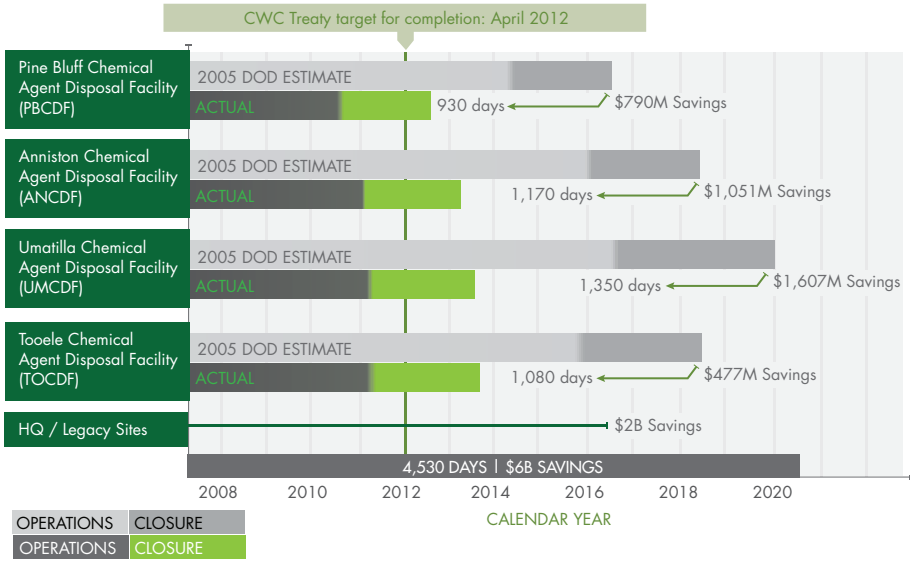
Early in the 1990s, as testing was being completed at the pilot incineration-based demilitarization facility on Johnston Atoll (a former military chemical weapons disposal facility), and construction was underway at the first of four incineration-based facilities in the continental United States, the Army estimated a life-cycle cost increase of the program to $6.5 billion. Design and testing of these incineration-based facilities were ongoing in the midst of ever-increasing changes in legal, environmental and mission requirements. Other complications arose from public concerns, and there were limitations on the acquisition strategies available for use on the program because of its financial magnitude and the multitude of applicable regulations.

Multiple competing contract awards were established to encourage competition; however, this approach diminished the desire among contractors to collaborate. This contributed to cost and schedule growth and proved inefficient overall.

CONTRACTING CHALLENGES

In 1997, challenges to the program continued to emerge and escalate as the

FIGURE 1



Completion of the safe destruction of the stockpile three months ahead of the CWC deadline of April 29, 2012, resulted in a projected cost avoidance to the taxpayer of approximately $6 billion. (SOURCE: CMA)

United States became a signatory to the CWC, an international treaty requiring 100 percent destruction of the chemical agent munitions by April 2007, later extended to April 29, 2012.

With each of the four incineration-based facilities in different phases of its life cycle (design, construction, equipment design, installation, testing and startup), the Army continued to face collaboration issues among the system contractors, which led to further schedule slippages and continued cost escalation.

Increased environmental activism, litigation, and tightening of U.S. Environmental Protection Agency standards and state regulations also contributed to unforeseen delays.

Changing requirements and stakeholder expectations led to modifications to the design of plants and equipment, in turn leading to frequent contract changes and unsustainable cost growth and schedule slippage.

With minimal likelihood that the four incineration-based facilities could meet the extended CWC deadline by continuing on this path, the focus had to change from annual performance to completion of agent destruction operations and closure of the facilities. There was also a need to motivate multiple contractors to work collaboratively and aggressively while maintaining a strong emphasis on safety and environmental concerns.

CHANGING THE DYNAMIC

While the stockpile continued to age, the program faced many technical, regulatory and political risks, and an increased projected cost of approximately $24 billion, bringing the program under the scrutiny of both Congress and the Government Accountability Office.

The CMA assessed the feasibility of converting to a fixed-price contracting model. However, this assessment revealed that cost-reimbursable contracts continued to be the most appropriate vehicle for completing the remaining operations and closure of these facilities, due to the many risks surrounding the program as well as the congressional mandate for maximum protection to the workforce, public and the environment. The CMA continued to evaluate potential modifications that would maximize performance and cost efficiencies with no trade-offs in the safety of the workforce, public and environment.

In 2006, the Army decided to establish life-cycle schedules and use them as the basis to negotiate required contractor resources, target cost and fee pools, as opposed to continuing annual levels-of-effort negotiations. Life-cycle contracting now allowed the contractors to take on complete responsibility for the entire project scope, from operations through closure. This change in strategy was possible at this time due to the maturity of the risk identification process, and the availability of historical processing rates and reliable and auditable schedules and costs, none of which had been available previously.

This effective risk management tactic provided CMA the opportunity to include multiple performance incentives in contracts, which encouraged contractors to complete the safe, timely and cost-effective conclusion of operations and closure of facilities. The CMA

A CLEAN BILL OF HEALTH

While empty today, 1,600-pound steel containers stored at Pine Bluff Arsenal, AR, once held hazardous materials and required decontamination. Operators decontaminated the last 4,307 ton containers in July 2011 under CMA direction.

had two key drivers for these incentives. The first was the CWC requirement for all signatories to destroy all chemical weapons no later than April 29, 2012. Also, since each of the four incineration-based facilities cost $10 million to $20 million per month to operate, the early completion of operations and closure would result in significant program cost avoidance.

The schedule deadline placed strict performance parameters on the contracts with April 29, 2012, as the key end-of-operations milestone. A cost-benefit analysis showed that as a result of finishing a project early, the government would achieve a net savings after making the contractor incentive payment for the achievement. When the incentives were put into place, the program was poised to realize the positive effects of contract reform.

TANGIBLE RESULTS

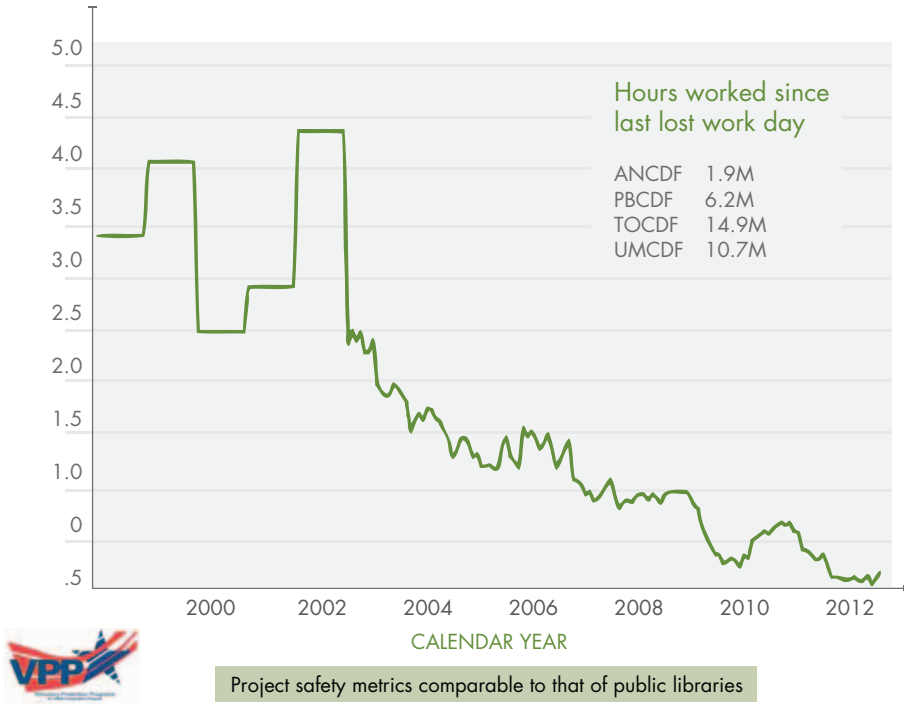
DOD recently issued guidance to the acquisition community to ensure program affordability and increase productivity in defense spending to deliver better value to the taxpayer. This guidance was followed by BBP initiatives for increasing efficiencies.

The new model using incentives to motivate the contractor supports these initiatives and has been successful. Encouraging the contractors to meet or beat defined milestones became a paramount force that led to their adoption of safe, innovative, commercially available technologies to continue to reduce schedule slippage and meet the CWC target date.

Congressional support for the use of an incentive approach had measurable benefits for the schedules. This was due, in no small part, to the four core operational evaluation expectations that the CMA put in place: safety, compliance, reliability and margin, as well as the use of compliance assessments, performance improvement and integration methodologies. This new strategy set the stage to synchronize the goals of government and system contractors.

In particular, CMA realized that a focus on safety, always a cornerstone of the program, should also be a vital element of incentives. As a result, the

FIGURE 2



Making safety a key performance incentive enhanced CMA's existing safety culture, paving the way for mission success. The last four incineration-based chemical agent disposal facilities achieved the highest recognition from the U.S. Occupational Safety and Health Administration's Voluntary Protection Programs. (SOURCE: CMA)

contractors chose solutions that not only met programmatic milestones, but also provided the quickest reduction in overall risk and ensured safety for the workers, public and environment. Despite the routine conduct of highly hazardous operations with lethal chemicals, the system contractors were able to accomplish total recordable injury rates comparable to those of public libraries, while finishing ahead of the projected contract schedule. (See Figure 2.)

CONCLUSION

The CMA's collaboration with contractors resulted in the safe destruction of most of the U.S. chemical weapons stockpile of more than 30,000 tons of lethal chemical agents in more than 3.4 million munitions. Lessons learned regarding this contracting strategy have been shared with ACWA to assist in its continuing mission to destroy the remaining agents at two storage sites.

The recalibration of goals and performance objectives between the Army and the contractors demonstrates CMA's capacity to engage and fully integrate all institutional stakeholders. The result was not only a life-cycle management approach in its true sense, but also strategic unity between the Army and industrial enterprise. By implementing this approach, CMA successfully demonstrated the competencies necessary to ensure the best value to the taxpayer while making the country, and ultimately the world, a safer place.

ENCOURAGING THE CONTRACTORS TO MEET OR BEAT DEFINED MILESTONES BECAME A PARAMOUNT FORCE THAT LED TO THEIR ADOPTION OF SAFE, INNOVATIVE, COMMERCIALLY AVAILABLE TECHNOLOGIES TO CONTINUE TO REDUCE SCHEDULE SLIPPAGE AND MEET THE CWC TARGET DATE.

For more information, go to ***http://www.jpeocbd.osd.mil/packs/Default2.aspx?pg=0****.*

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COL JOHN LEMONDES is PM CSE. He holds a B.S. in agricultural science and environmental technology from Pennsylvania State University; an M.S. in public administration and an M.B.A. from Syracuse University; and an M.S. in national resource strategy from the Industrial College of the Armed Forces.. Lemondes is Level III certified in program management and is an AAC member.

PEO AMMUNITION

PM
Combat
Ammunition
Systems

PD
Joint
Services

PM
Close
Combat
Systems

PD
Joint
Products

PM
Towed
Artillery
Systems

PM
Counter
Explosive
Hazard

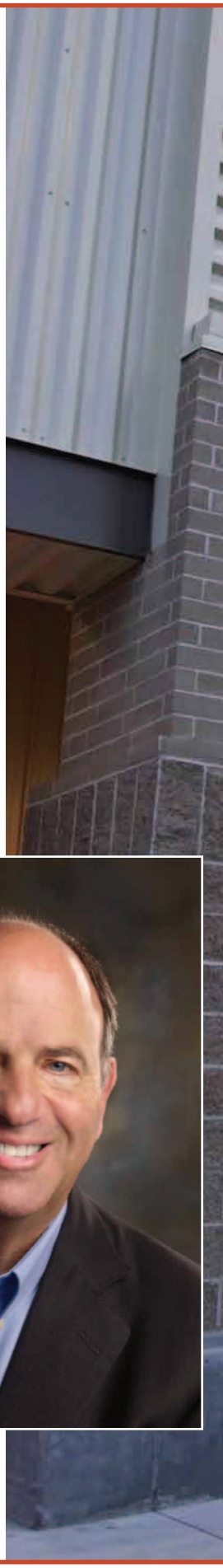
PM
Maneuver
Amunition
Systems

?

CRITICAL THINKING

The GENIUS of Simplicity

Costco profits by taking great pains to keep it simple and embracing the 'intelligent loss of sales'



This Critical Thinking interview is with Mr. Richard Galanti, executive vice president and chief financial officer of Costco Wholesale Corp.

Galanti, who is also a member of Costco's board of directors, began his retail career in 1964 at the age of 8, bagging groceries at his father's grocery store in Canton, GA. He went on to earn a B.S. in economics from the Wharton School of the University of Pennsylvania and an M.B.A. from Stanford Graduate School of Business. Galanti joined Costco in 1984 as vice president, finance.

Previously he worked on Wall Street as an investment banker with Donaldson, Lufkin & Jenrette Securities Corp., where he provided a variety of financial services to both public and private corporate clients, including Costco in its infancy.

He is currently serving a three-year term on the board of directors of the Federal Reserve Bank of San Francisco and recently joined the advisory board of the University of Washington's Michael G. Foster School of Business.

With 69.1 million cardholders including individuals, families and businesses, Costco is the second-largest retailer in the United States and the seventh-largest in the world. It operates 622 warehouses in eight countries, employing a total of 160,292 full- and part-time employees. Costco's $99.1 billion in revenues for its FY12 represents more than 2 million transactions a day including 113,000 carats' worth of diamonds, 62 million rotisserie chickens, 36 million prescriptions filled, 3 billion gallons of gas, 16,500 mortgage loans totaling $4 billion, 160,940 vacation packages, and 1.5 million pumpkin pies during Thanksgiving week.

A GOOD LIVING

Costco was founded on a philosophy of providing a good living wage and affordable health care benefits, to attract employees who want to stick with the company and work hard. On average, Costco's 160,292 full- and part-time employees, 90 percent of whom are hourly, earn more than $21 an hour, with a starting wage of $11. By comparison, across big retail, the average hourly rate ranges from $13 to $15 an hour. (Photos courtesy of Costco Wholesale Corp.)

Q. One of the ways that the Department of Defense and the Army want to make affordability a fundamental requirement for acquisition investments is to do more market research before choosing vendors. What drives Costco's research into the products you decide to buy? What are you looking for?

A. In terms of the types of products that we want to sell to our members, it starts with the 80-20 rule: What are the 20 percent of items that represent 80 percent of the sales? Then, how can we choose from that limited set of items and provide the best-quality merchandise at the lowest possible price to our members? At Costco, you'll find fewer than 4,000 active SKUs (stock keeping units). That might compare to a supermarket with 40,000 to 50,000 items and a supercenter with 100,000-plus items.

The total number of items is a little less than 4,000, but the breadth of the items is enormous, from tires to mayonnaise, to fresh foods, to furniture, to jewelry, to certain services. So it's a wide selection of items but not a lot of depth within each category. That is very deliberate. If you think about the fact that a supermarket generally marks up its goods 20 to 25 percent or more, and home improvement centers 30-plus percent, and the mall stores 50 to in excess of 100 percent sometimes, and we'll mark our goods up about 11 percent on average, you've got to bring great efficiencies—not just buying in large volumes, but efficiencies throughout the system.

Take something as basic as a can of peaches. If you go into a supermarket, you'd expect to find three or four brand names plus perhaps a private label. You'd then find four or five different sizes for each of those brands. Then you'd find sliced and diced and halves, and then you'd have heavy syrup and light syrup. In the end, you might have 40 different choices just of canned peaches.

Part of our ability to sell at such low markups is to identify those fast-selling items that not only provide great quality but also the very lowest price—not just the purchase price but also the lowest cost in terms of logistics: shipping and handling by both the manufacturer and the employees at Costco, including stocking and ringing up the goods through the cash register.

At Costco, we're going to sell what's referred to in the business as a No. 10 can, which would be for a restaurant, commissary or day-care center, as well as a six-pack of one of the leading national brands. Maybe it's sliced, maybe it's diced, but it's going to be the regular consumer-size can. Unless your 8- or 10-year-old is having a birthday party and you need the peach halves so you can put whipped cream and a cherry on top, nine times out of 10, the person buying that can of peaches is going to bring it home, open it up and put it on the table for dinner with the family. And you're generally indifferent whether it's one of those three leading brands or the private label, as long as you know it's going to be high-quality.

So what we've done is say, Okay, we're not going to have 40 different choices of canned peaches. One, we don't have to make 40 different buying decisions every week. Two, in a supermarket chain, the

STAYING AHEAD GLOBALLY
Costco operates 622 warehouses in eight countries. In 2012, the company ranked No. 1 among warehouse stores with a 46.5 percent market share, compared with 38.4 percent for Sam's Club, a unit of Wal-Mart Stores Inc. Costco is the second-largest retailer in the country and the seventh-largest in the world by sales, as well as ranking No. 24 on the Fortune 500 list.

distribution center would have ample qualities of each of those 40 SKUs of peaches; then each store clerk orders one case of this and two cases of that, and then it's put on a truck and delivered to each retail store and put in the back room, and then brought out, and then each case is cut open and put on the shelf.

Getting back to the buying side, one of those leading brands probably overproduced one of those sizes last month. And so they're giving everybody, whether it's Costco, Walmart, Safeway, Kroger or Albertson's, better value on that because they want to clear out that excess inventory on that one SKU.

Well, each of those retailers is probably going to buy some extra of that item, maybe an extra two- or three-week supply. However, at Costco that's all we're going to buy that month, because it's a leading national brand. And then we're going to tell them, "You know what? Don't put it in single cans, and 24 cans to a case, 100 cases on a pallet, where the stock clerk has to cut open each case and neatly stack every one of those 24 cans by hand so that all the peaches look pretty up front on the shelf, and then the cashier has to ring up every single can. Put them in six-packs, like you do soda, and don't even put them in corrugated boxes; put them on a pallet and build the pallet basically in six-packs and shrink-wrap it. And let's take 2,400 cans, or 100 cases of 24."

At Costco, that entire pallet of that one SKU, in order to stock those 2,400 cans, there's a forklift operator putting it on the selling floor and cutting off the shrink wrap. And then you, the customer, are willing to buy six cans at a time instead of four, three, two or one because it's such a great value. And then at the register, you're only ringing up once for those six cans and not six hand strokes.

LITTLE DETAILS, BIG BUSINESS
No detail of Costco's operations is too small to be examined carefully for possible efficiencies, including the impact of packaging on the entire supply chain, from receipt of deliveries to time spent at the cash register.

So again, it gets back to that intelligent loss of sales: If we happen to have sliced peaches that month and you needed halves because you're having a party with the whipped cream and the cherry on top, we're going to lose that sale. But think about how many more cans we're going to sell, and at such a lower price. We're looking at selling what's hot, and also what will save the customer money in terms of the quality and the value that we provide.

Q. How long are you committed to that one vendor whose peaches you chose to sell?

A. We're committed to high-quality items with which we can save the consumer money and sell a lot. Our members have learned over time that part of the requirement of these great savings is that sometimes we might even be out of an item, or we might choose not to sell an item.

One of the things we do is to recognize that, given our purchasing power, much like the Army's or even bigger than the Army's perhaps, we generally don't like to represent more than 20 percent of a given supplier's sales, because one day we may choose not to sell that item, whether the product stopped selling well or there's something better or hotter out there. If we choose to delete it, we don't want to destroy that supplier. It may not be

IT'S THE DIFFERENCE BETWEEN PERFECTION AND EXCELLENCE. IT'S GOING TO COST YOU A LOT MORE MONEY TO GET TO PERFECT, BUT EXCELLENT IS GOING TO COST YOU LESS.

anything that they've done. So we have a process in place, standards to help ensure that once a supplier has been with us for a certain period of time, typically at least one or two years, a decision to terminate that relationship must be vetted at the highest level of management.

If they've done something dishonest, if a vendor did something wrong, they're out. If the proverbial manufacturer of butter cookies took a little butter out of the cookie because butter prices went up, changed the quality without telling us, that's fatal. You have to be upfront and honest with us. At the same time, if the price of something has changed dramatically, come to us and talk to us about it, and we'll work with you. The message throughout the organization is that we want our buyers to be tough but fair with our suppliers. We want the best quality at a great price, and they won the business based on that. But ultimately we recognize that they've got to make money, too. We just want us and them to make a little money, a lot of times.

Q. There's a lot of discussion in the military about the 80 percent solution. And that is, when you look at the portfolio, what you may want, ideally, may not be what you get because of pricing and because of affordability, availability, logistics, whatnot. From that point of view, to get back to the peach example, how does Costco choose which peaches it's going to get, other than through oversupply and the possibility of a discount?

A. Somebody has to prioritize all those requirements: What must you live with, and what can you live without? So we've started with the premise that you, the customer, will generally be happy with any one of the three or four high-quality brands. And we've also started with the premise that most cans of peaches are not bought to present them on a party tray in a particular way, in other words sliced vs. diced vs. halves.

Now that doesn't carry through to every item. We're going to sell only the best-quality fresh meat, USDA Choice and above, even though we might be able to save you money if we sold processed, Good or Select, which is certainly healthy and fine to buy, but it's not the cut that we're prepared to sell our members. In the case of peaches, many of those brands are fine, but there's probably an institutional-grade can of peaches that we're not prepared to sell, even though we could save the customer a little more money. Not that there's anything wrong with it; it's our choice.

It's the difference between perfection and excellence. It's going to cost you a lot more money to get to perfect, but excellent is going to cost you less. You've still got to put a lot of effort into it. It's the same thing with the 80-20 rule: We're going to sell the 20 percent of items that represent 80 percent of the sales. We're going to spend all of our time focusing on the things that can accomplish 80 percent of what we do and recognizing that those last little incremental improvements sometimes are inefficient.

Q. Getting back to the vendors, a follow-on question: How do you encourage cost efficiencies, productivity and innovation in your vendors? Do you have any sorts of incentives?

A. There's no incentive, like, if you save us this much more, you'll get a piece of the action. But when you get back to the limited selection, what always amazes people when they hear from our buyers is first, the degree of knowledge that they have, not only on the quality—if it's apparel, the thread count; or if it's food, commodity pricing—and the cost of the tin cans and packaging, and the freight costs. When we're trying to manage 3,800 items in a location, the buyer's trying to buy those 3,800 items compared to buyers managing 150,000 to 250,000 different items.

Part of our genius, if you will, is our simplicity. It's a lot easier to be smarter on fewer things. We're a very lean company. We don't have any research

and development department. All of our employees are the research and development department.

Another aspect is being transparent with our vendors. If you're a small, regional company doing $4 million in sales, we're not going to be able to accommodate you because our appetite is so large; we never want you to double your business just for us, in case we ever decide not to use you. But by the same token, the key is coming in and understanding our quality, understanding that we're not necessarily as interested in what's the hottest-selling item in the department store today, but understanding the entire cost structure and the supply chain costs, and how we can work together to lower those costs, increase the quality of the merchandise and ultimately lower the price to our members.

It's also recognizing that we're not looking to sell at a price point. A lot of manufacturers will say, we can sell you this item at $11, and with shipping $12.50, and you can sell it at $19.99 to make a 50 percent markup. First of all, we're not interested in a 50 percent markup. If everybody else is selling it for $24.99, and you're trying to get us to sell it for $19.99, we want to figure out how to do a two-pack for $14.99. And we'll make our 10 or 12 percent, thank you very much. And if it sells a lot and we may end up making more money, let's figure out how to take that item and improve it and lower the price even further and drive more business.

Q. What's the primary incentive, then, for a vendor to want to sell to Costco, since you're looking to pay them a lower price?

A. The primary incentive is volume, and volume not in 27 different versions of the item. If you think about it, using the simple example of toilet paper, well, first of all there's only three or four big suppliers out there that can accommodate our volume. A lot of times, if we can be 5, or 10, or 20 percent of one of their facility's production capacity, it eliminates a big hurdle for them in getting to efficient capacity utilization.

If we tell them what they need to do and we expect quality, then they know that's what they need to do. They don't need to try to sell us six other things.

Q. Looking at it from an entirely different perspective, what kinds of incentives can Costco offer its employees to encourage efficiencies?

A. We don't have commissions anywhere in the company. A lot of the incentives are growing through promotion and merit, being promoted to the next-level position—for example, if you start off as an hourly inventory control specialist in merchandise, which is making sure the product is flowing through the system, to the assistant buyer, to the buyer, to the assistant merchandise manager, to the general merchandise manager, which is typically at the VP level.

At Costco, it's one message: We all work hard. I think part of it is that we start by recognizing that 90 percent of our employees are hourly. Of the 300 people employed in an average warehouse, with a warehouse manager, 20 are salaried; the rest are hourly. The philosophy of our founders was, and still is, to provide a good living wage and affordable health care benefits. So in an hourly environment where many part-time hourly employees at other retailers don't even get health care, all of our employees do.

Our average hourly wage in the U.S., for example, is a little over $21 an hour. By comparison, across big retail, whether it's Home Depot, Walmart, Target, Best Buy, the supermarket chains, the averages range anywhere from $13 to $15 an hour. That's the average, whether you started yesterday or 20 years ago.

Our starting hourly wage is $11. If you're full-time, working 38 to 40 hours a week, in your fifth year of service you'll get to the top of the scale. After an employee has worked for the company for about 10 years, there are some added increases every five years besides the usual annual cost-of-living increase, up to the 25-year mark. But you'll get up to the top of the scale, which is $21.50 right now, in four to five years instead of over a lifetime.

So if we're paying such a higher premium, darn near 40 to 50 percent higher, we'd better be hiring better people to start with, who want to stick with us and work hard. We looked at our inventory shrinkage numbers, which are very low. Part of it is, nobody's stealing toilet paper. At Costco, many times when we catch an employee

WE WANT THE BEST QUALITY AT A GREAT PRICE, AND THEY WON THE BUSINESS BASED ON THAT.

doing something wrong, it's because a fellow employee has turned that person in, and we've got to believe that's because our employees believe in us and trust us, and that's something we work on every day of the year; that's set up in our policy, that's paying our people well, that's promoting from within.

We don't hire M.B.A.s into guaranteed management positions. Part of that's the philosophy of the founders; it's kind of like the old philosophy of doctors, I worked 100 hours a week when I was doing my residency, and so will you. Seventy percent of managers in warehouses today started by pushing carts and stocking shelves. They know what it's like to sweep the floors. As our employees grow and become supervisors and then managers, it's the responsibility of each and every one of them to teach and develop the next generation of supervisors and managers.

We highlight examples of what we should be doing, not just what we shouldn't be doing: There are plenty of things, and Costco Today, which goes out monthly, highlights efficiencies, simple things in the warehouse. I think of a silly example, years ago, of kids pushing carts in the parking lot. We have the little rope that attaches to the cart, whereby you can push eight carts at a time now. You can maneuver, and it's not like you're going to run into a car or something. It's those simple things: What's somebody doing out there? Who's going to have our best ideas? People out there. And when we promote those ideas and present them to the rest of the workforce, they look at that and they come up with ideas. So no idea's too small.

One of our challenges is to provide growth opportunities to all, even when our employee turnover is so low; we're growing our workforce at 4 or 5 percent a year. So we move people around between functions, even if they're physical functions, such as stocking shelves or folding, or working the membership desk.

'A TREASURE HUNT'
Costco's $99.1 billion in FY12 revenues represents more than 2 million transactions a day, including sales of diamonds, rotisserie chickens, prescription medicines, gasoline, mortgage loans and vacations. Yet each warehouse store carries fewer than 4,000 separate active items, compared with 40,000 to 50,000 items at a typical supermarket or 100,000-plus items at a supercenter.

Q. What kinds of processes does Costco consider unproductive? How do you define bureaucracy in its worst sense?

A. Bureaucracy, in its worst sense, is setting up procedures, committees, inefficiencies in decision-making that take longer and make it more costly to get things done, recognizing that we're a different company today than we were when we were 50 people in a central office 28 years ago with four locations. As Jim Sinegal, our co-founder and recently retired CEO, said, if he could do everything himself, there would be nobody else employed here. But you have to have organization.

We pride ourselves on being efficient, and we have to constantly revisit what we're doing and question everything we do. Let's take a look at everything we're doing and what we shouldn't be doing anymore, even though we're doing it well.

Q. In choosing vendors, the Army is focusing more and more on "what" it wants them to produce and less on the nitty-gritty details of "how" to produce it. How does Costco ensure it gets the quality that customers want without creating overly prescriptive requirements for vendors that could prove onerous and counterproductive? How do you develop your house-brand products?

A. It's a two-edged sword. On the one hand, we demand whatever spec we want. If it's a patio umbrella, we want a certain number of threads per inch and

a high-quality turning mechanism and a certain diameter for the umbrella. Now, we're not going to tell them where to go buy their thread necessarily, other than that there's the vendor code of conduct that it can't be child labor, and you now have to provide your source of work; you now have to trace your work for a lot of food items. And they're going to determine the spec of what we want, and they're going to bid it based on that spec.

We have eight regional buying offices in the U.S., two in Canada and one in each other country. Needless to say, the manufacturer wants to accommodate the buyer in each region. And shame on us if we've got four different buyers wanting four different packaging and sizes because that buyer's decided that something will sell better in that region. From the Costco side, we have to turn them down and say, "Guys, think of the inefficiencies that we're creating, the efficiencies that we're losing."

Q. Small businesses are a significant element in the Army's strategy to promote effective competition, representing 26 percent of all contract dollars awarded, because they are thought to be more innovative and quicker to respond to changing needs than larger companies.

What competitive value do small businesses bring to Costco's goods and services?

A. On the one hand, I did say that because of our appetite and our size, our quantity needs, sometimes a small vendor can't supply us. On a regional basis, we will bring in small vendors to do things, and sometimes that will create exciting opportunities for us, new items. So we can't lose sight of that innovation. We don't have some of the limits that the government does—we don't have to have X percentage for small businesses and X percentage for minority-owned small businesses. We probably can be more pragmatic on that than the Army, but we will have small business trade shows, if you will, to advise small vendors. We sometimes can turn them on to manufacturers that use small vendors, or tell them how to sell to a company like Costco. Sometimes we can turn a regional item into a national item.

I think small businesses bring innovation and unique regional tastes. As much as we're an international, cement-floor, big-box retailer, we're also a merchandiser. And part of merchandising is offering exciting merchandise, and sometimes exciting merchandise can be found at the regional level. There may be a particular item that is unique to a particular region that we never would have found out about if we only worried about big national brands. It's a treasure hunt.

Q. Improving the professionalism of the workforce is the newest area of focus for Army Acquisition. What sort of culture does Costco strive to instill in its workforce? If you had to describe this in three sentences to a new employee, what would you say?

A. We're trying to instill in them, first of all, that our mission at Costco is to provide the best-quality goods and services at the lowest possible prices to our members, and doing it in an honest way. And where there are promotional opportunities for the individual, it's an open-door policy. Finally, that we deal with things with a high degree of honesty and integrity, and everybody gets a fair chance.

When we talk about quality, it's not just quality of merchandise; it's how often the bathrooms are cleaned; it's the 10-foot-wide parking spaces instead of 8-foot-wide. And we get great grades for quality, even though it's just a no-frills warehouse. We get high marks for customer service, even though in our case the best service is self-service sometimes. Our returns policy is great; we get compliments all the time.

The other thing is, how do we deal with adversity? And that's something that our CEO has talked to our managers about at the managers meeting: You deal with it head-on. Years ago, we were written up in the Northeast about a rodent problem at one of our New York City locations. Now, if you sell food, whether you're a restaurant or a convenience store or a retail supermarket, at some point you're going to have a rodent issue. It must have been a slow news day, but it was on one of the national programs. They asked Jim, our CEO at the time, and he said, "I'll meet you at the warehouse and we'll walk it."

I remember in the office the next day, asking him, "How did it go?" And he said, "Well, I was standing in the middle of the produce section, taking the interviewer's questions, and I was responding to one of the questions, and he said, 'Let's take that again. You sounded a little defensive.' " And this is an investigative reporter. He saw that we weren't trying to hide anything. We didn't write him a letter from our lawyer saying, "If you have any questions, send them to us. And no, you can't go near our warehouse."

So I think how someone deals with adversity, whether it's an E. coli recall or a problem at a hotel through Costco Travel, the best way we can deal with things is to deal with them straight-on, and if we have made a mistake, we don't throw a bunch of lawyers at it. We make it right with the customer.

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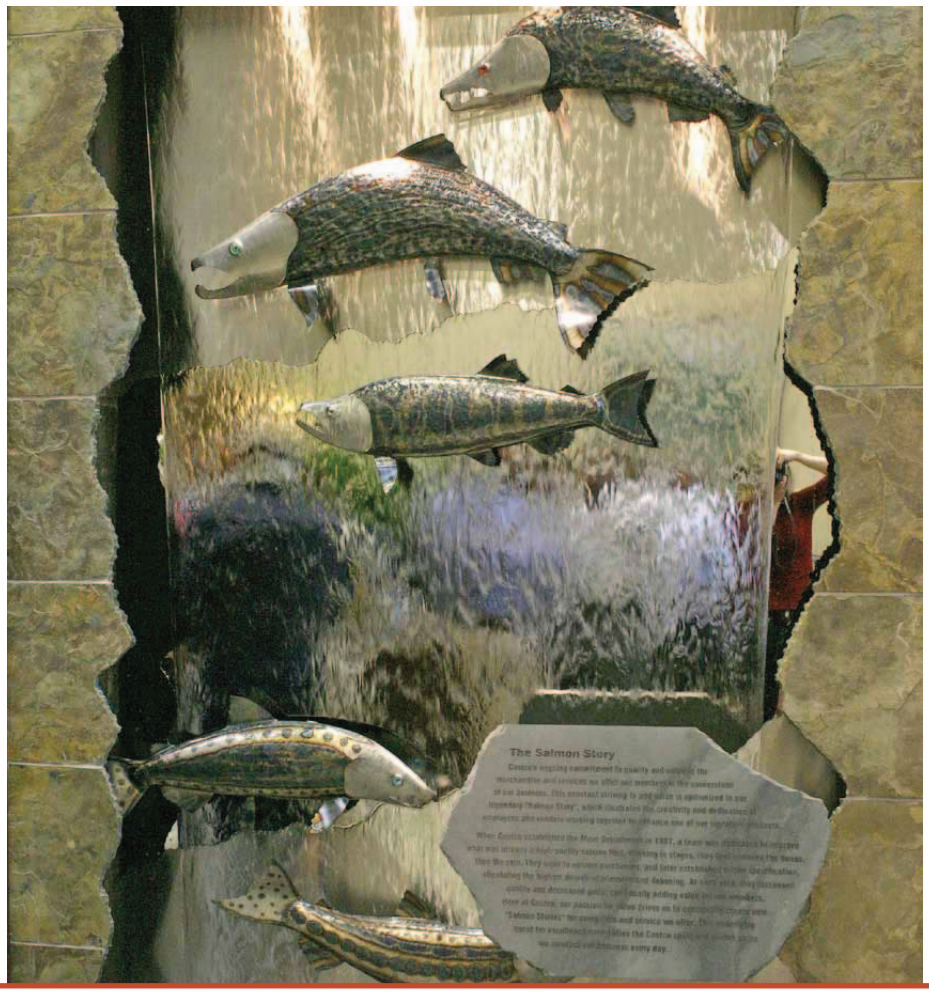
PUTTING THE *FISH IN* EFFICIENCY

A FISH STORY
Costco's successful strategy to make its salmon more appealing to customers inspired management to create the Salmon Award, which recognizes outstanding performance by employees and suppliers in improving products and processes. (Photos courtesy of Costco Wholesale Corp.)



Everybody at Costco knows the "salmon story"—every employee, from the stockers on the floor to the highest-level buyers.

When Costco first established its meat department in 1987, the company didn't sell salmon. So in 1990, it assigned a team to develop a high-quality salmon fillet. The first product, introduced in 1992, was a skin-on fillet that gave Costco the desired quality for $5.99 per pound. But the salmon team saw room for improvement. "The first fish we brought in wasn't so pretty. It had the head, the tail, the whole nine yards," said John Matthews, senior vice president for human resources and risk management, and a retired U.S. Navy Supply Corps commander.

Costco's buyer sat down with suppliers and discussed how to make the salmon look better. The first step was to remove excess parts of the fish, starting with the head. Along with raising the quality, Costco reduced the price, to $5.29 a pound. Later, the buying team decided to take off the fins. The skin and pinbones followed. And the price went down some more. The result, by 1996, was a fully

trimmed, skinless and boneless fillet for $4.99 a pound.

The next step was to start buying salmon in bulk from Chile and Canada, which enabled Costco to lower the price to $4.79. Most recently, in the fifth round of changes, Costco further improved the quality with additional trimming, while keeping the price the same.

Costco sold 2 million pounds of salmon that first year. In 2011, it sold 130 million pounds.

"Nobody ever fell asleep on salmon," said Matthews. "We look at that as a metaphor for how we do business. It's that year-over-year intent to make things better that got us there: How can we continue to enhance that relationship with customers?"

Costco institutionalized the salmon story by creating the Salmon Award, given by the CEO to recognize outstanding performance by employees and suppliers. The company has a wall of Salmon Award winners in the lobby of its corporate headquarters in Issaquah, WA. But the real impact is in the warehouses and depots, where employees are encouraged to look constantly for ways to improve quality and save the company and the customer money; and in the offices of Costco suppliers, who stand to share the benefits of more efficient operations. Even a 2-cent savings on the cost of ketchup adds up to $340,000 saved over a year, Matthews noted.

"We are always making small, incremental improvements. We're very focused on lowering costs and maintaining the lowest cost in the marketplace," said John Thelan, senior vice president, depot operations.

IN SEARCH OF THE NEXT GREAT IDEA
The next Salmon Award could relate to any area of Costco's operations. Outbound shipping is one example of where Costco is making a concerted effort to find efficiencies in packaging, as well over half of its depot operating costs are for outbound freight.

At Costco's 34 depots in North America, for example, that approach has led to improvements in the way the company takes its deliveries. "We studied this for a number of years," Thelan said. The company concluded that it was spending too much time on the paperwork and other administrative details related to the 1.2 million deliveries that the 34 depots together receive each year. Costco made several changes to route each incoming truck immediately to a loading dock and eliminated the need for the driver to get out of the vehicle. The result was to knock 20-30 minutes off every delivery.

The quest for efficiencies involves both employees and vendors. "For example, we work with our equipment manufacturers (of forklifts, etc.) to find out how they can make something sturdier, bigger or smaller," Thelan said. Close to 90 percent of Costco depot employees operate machinery as part of their jobs.

Outbound shipping, too, is an area ripe for efficiencies, Thelan said. "Well over half of our depot operating costs are outbound freight." A major target for further efficiencies is packaging, he said. "We've made some improvement, but there's room for more, such as eliminating oddly sized or undersized items that make pallets harder to stack." The goal is to achieve full use of pallets and full use of outbound trailers.

"Every now and then, somebody comes up with a new way to load a pallet," Thelan said. Thus, Costco employees can make their jobs easier and more productive. And what do suppliers gain from a good idea, given that they don't simply keep the money saved in freight costs? "Anything suppliers can do to help lower costs allows for more savings to our members," Thelan said. "And that, in turn, means they get to sell more."

—Margaret C. Roth

MAKING THE NUMBERS WORK

Tobyhanna Army Depot saves time, money by reducing the complexity of its supply chain management

by Mr. Steve Stark

Production at Tobyhanna Army Depot, PA, requires a vast amount of raw metal—hundreds of different materials—and a lot of vendors to supply those metals. While that was a solution, it also became a problem.

Working with multiple vendors over the years resulted in a complex process for cataloguing metals, which in turn periodically resulted in stock number redundancies or multiple part numbers, according to Michael Henry, chief of the Production Management Directorate's Materiel Management Division at Tobyhanna.

Tobyhanna Army Depot is the largest full-service electronics maintenance facility in DOD. Its mission is total sustainment: the design, manufacture, repair and overhaul of hundreds of electronic systems including satellite terminals, radio and radar systems, telephones, electro-optics, night vision and anti-intrusion devices, airborne surveillance equipment, navigational instruments, electronic warfare, and guidance and control systems for tactical missiles. A major element of the U.S. Army Communications – Electronics Command, Tobyhanna prides itself on the state-of-the-art automated test equipment and other advanced technologies it uses to deliver products and services.

With no standard supply format, it was time-consuming and inefficient to research all possible materials every time a customer submitted a request. To avoid the excess inventory that resulted from placing unnecessary orders, employees had to perform a manual review of every part to find a match. This happened on virtually every project and led to increased lead time, excess materials and higher costs. It also became a storage issue when the same material was stored in multiple locations, which made the search more difficult.

Ultimately the solution, which Tobyhanna developed after extensive analysis, was to consolidate its supply and supply tracking by using TW Metals Inc., a global supplier of specialty metals and the Northeast prime vendor of raw metals for DOD activities on the East Coast. Thus Tobyhanna tapped into the efficient supply chain already established for TW Metals.

ONE PROCESS, MANY REQUIREMENTS

Tobyhanna, as an Army Working Capital Fund installation, gets its operating capital from its revenue. So it has to deliver high-quality products on time.

"To improve efficiency and streamline processes, we developed a standard process that met all of the depot's requirements," Henry said. "The TW Metals project has helped us address issues and better manage our raw metal stock."

Previously Tobyhanna Army Depot part numbers were not easily identified; items could not be ordered through the DOD Supply System when using the locally generated part numbers. Tobyhanna part numbers consisted of a description

that was more familiar to the engineer and vendor.

An example was the part number for aluminum bar, ALBR6061/.75X1.5X16FT, which when researched translated to National Stock Number (NSN) 9510-00-493-4080. Using this NSN, Tobyhanna was able to submit a Military Standard Requisitioning and Issue Procedures (MILSTRIP) request to the Defense Logistics Agency (DLA) using its prime vendor service. This established a delivery time of seven days and eliminated the solicitation process.

"We converted all material numbers to National Stock Numbers, created detailed descriptions for each entry into the new system, and eliminated the depot's parts numbering system in favor of a standardized ordering system," Henry said.

The results? "Employees using the new system have been able to reduce the time it takes to research part numbers for raw metal stock," said Charles Corman, a supply technician in the Materiel Management Division. "The improved methods have had a ripple effect across work centers, helping organizations meet requirements in a timely manner."

"Personnel have standardized data entry by listing multiple part numbers under the same National Item Identification Number, streamlined the use of National Stock Numbers and reduced the amount of time personnel spend researching the various raw materials," Henry said.

The TW Metals project marks a major improvement in supply chain management, according to Charles McDermott, a supply system analyst assigned to the Materiel Management Division. "The enhanced supply process decreases lead times, reduces excess inventory and material cost, and keeps projects on schedule," he said.

Since the TW Metals Project was put into effect in the fourth quarter of FY10, the depot has been able to reduce the average lead time for ordering metals from more than two months to 14-21 days. Other improvements include a rate of on-time delivery of nearly 99 percent, McDermott added.

EXAMINING THE PROCESS

To remake the old system into a newer, more efficient one, a process improvement team performed a thorough review of how Tobyhanna orders and receives raw materials, as well as how it enters part numbers into its tracking system. In the process, the team identified ways to improve the supply chain, according to Henry.

Tobyhanna employees are empowered to search constantly for ways to improve processes. The depot has conducted more than 1,115 Lean Six Sigma events since FY02 with participation from 98 percent of its workforce, resulting in more than $204 million in savings and cost avoidance.

Members of the Materiel Management Division gathered input from across the depot before deciding to make the changes in its supply chain, Henry said.

TECHNOLOGICAL ADVANTAGE

Robert Migatulski, metal forming machine operator, checks the alignment of the laser before cutting metals to specifications. Delivery of materials to Tobyhanna Army Depot (TYAD) is performed twice a week and sheet metal is banded in 20-piece packs for easier loading of the laser, which can cut aluminum, steel, stainless steel and brass. Migatulski works in the Systems Integration and Support Directorate's Sheet Metal Fabrication Branch. (Photo by Steve Grzezdzinski, TYAD)

It took the team of supply analysts and technicians, production controllers, expediters, engineers, material handlers and members of a remanufacturing bills of material team about a year to fully implement a solution, according to McDermott. "As part of the process, team members researched material descriptions, and standardized NSNs and TW Metals part numbers. Once the new order entry system was implemented, employees were able to cross-reference manufacturers' part numbers and Tobyhanna's part numbers with TW Metals part numbers and NSNs," he said.

Supply Technician Corman noted that Tobyhanna decided to work with DLA Troop Support, Philadelphia, PA, as a primary supply source for raw metals, "partially based on DLA's ability to make purchases to meet the needs of the depot."

DLA contracted with TW Metals to provide raw metals. Tobyhanna in turn contracted with DLA for TW Metals to use a "just in time" delivery schedule for material, eliminating the need for on-site storage. "Working with TW Metals through DLA provides a standardized process for purchasing raw material where none existed in the past," Corman explained. Contrast that with the old process in which a purchase necessitated soliciting bids from a variety of local vendors, with no consistent lead times and constant variations in pricing.

ONE-STOP TRACKING
Charles Corman (left), supply technician, and Charles McDermott, supply systems analyst, verify program requirements. Tobyhanna officials created a spreadsheet to track requests for quotes and orders, lot size, lead delivery time changes and delivery dates, among other factors. Corman and McDermott work in the Production Management Directorate's Materiel Management Division. (U.S. Army photo)

TW Metals' materials are delivered twice a week and sheet metal is banded, eliminating the need for users to count and stack sheets manually.

The just-in-time contract "requires one full truckload of material to be maintained at the machine, one pallet stored in the warehouse and a scheduled delivery in transit to replenish the warehouse, McDermott explained. "Requisitioning material using this method has resulted in a compressed lead time of 7 to 11 days," because the constant flow of material reduces the need to stock, store and issue it.

HARNESSING TECHNOLOGY

"Basically, we leveraged technology to achieve a new possibility with teamwork and efficiency," said McDermott.

Employees now use a shared spreadsheet, he said, to track several key elements—requests for quotes and orders; changes to lot size and lead delivery time; DLA long-term, direct-vendor delivery orders; delivery and request dates; and Tobyhanna's part number conversions.

"The spreadsheet is maintained on a shared drive to monitor all raw metal commodity ordering. Several organizations share the responsibility for maintaining the process and providing accurate information," McDermott said. That effective communication is maintained through meetings with production engineering and systems integration and support personnel, which allows for a more efficient process for the entire purchase request.

McDermott pointed out that personnel can check metal ordering status at the TW Metals website and through the Logistics Modernization Program. They can enter information directly into the new system. "The new system offers a consistent

SAVING ON STORAGE
Frank Karvan, material handler leader, delivers sheet metal to support mission requirements. Tobyhanna Army Depot implemented a "just-in-time" delivery schedule to reduce the amount of raw materials stored at the depot. Karvan works in the Production Management Directorate's Materiel Management Division. (Photo by Steve Grzezdzinski, TYAD)

process, leading to a more efficient methodology," McDermott said. Because Army contracting personnel are not involved, "The middleman is removed, which speeds up the process. There are fewer purchase requests performed each day, allowing employees to perform more analytical work." There is even a process for engineers who build the bills of material to check NSNs and TW Metals' Materiel Control Numbers.

CONCLUSION

"This kind of process improvement and partnership effort are fundamental to the Army's efforts to improve its supply chain management," Henry said. "The overall benefit derived from this contract is [that] the Joint warfighter receives a safe, high-quality product on time," he said. "Implementing this new process has already had a direct impact on several high-profile projects."

For example, the Counter Radio-Controlled Improvised Explosive Device Electronic Warfare workload received material specifically palletized for Tobyhanna's requirements, which resulted in a more efficient process and reduced costs, according to McDermott. In addition, "We were able to obtain an airframe-quality alloy for the U.S. Marine Corps helmet bracket workload at a reduced lead time and reduced cost," he said.

For more information, go to ***www.troopsupport.dla.mil/ce/*** *or* ***www.twmetals.com****.*

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A GRIP ON PURCHASING

The CB program realizes the Army's goal of reducing costs for hardware and software, as well as other purchasing priorities. Leveraging the Army's buying power, CHESS now makes tablets and slates available through its online ordering system, IT e-mart. (Image by David Baker, PEO EIS)

ECONOMIES *of* SCALE

CHESS pursues better IT buying power through flexible procurement, consolidation

by Mr. Brendan Burke

As the Army's designated primary source for commercial information technology (IT), the Computer Hardware, Enterprise Software and Solutions (CHESS) program office within Program Executive Office Enterprise Information Systems (PEO EIS) has considerable responsibility for identifying efficiencies and cost savings.

In partnership with the Army chief information officer (CIO/G-6), U.S. Army Information Systems Engineering Command, U.S. Army Network Enterprise Technology Command and U.S. Army Contracting Command – Rock Island (IL), CHESS provides architecturally sound standards and policy-compliant IT enterprise solutions to all Army activities and organizations. CHESS also serves as the Army's Enterprise Software Initiative (ESI) software product manager for DOD's ESI program.

CHESS collaborates with the U.S. Air Force, U.S. Navy, Defense Information Systems Agency and U.S. General Services Administration in establishing and managing enterprise software agreements (ESAs). Of the more than 57 DOD ESAs, the Army is responsible for managing 25. CHESS also has the responsibility to approve waiver requests for Army organizations that cannot meet their requirements under the ESAs.

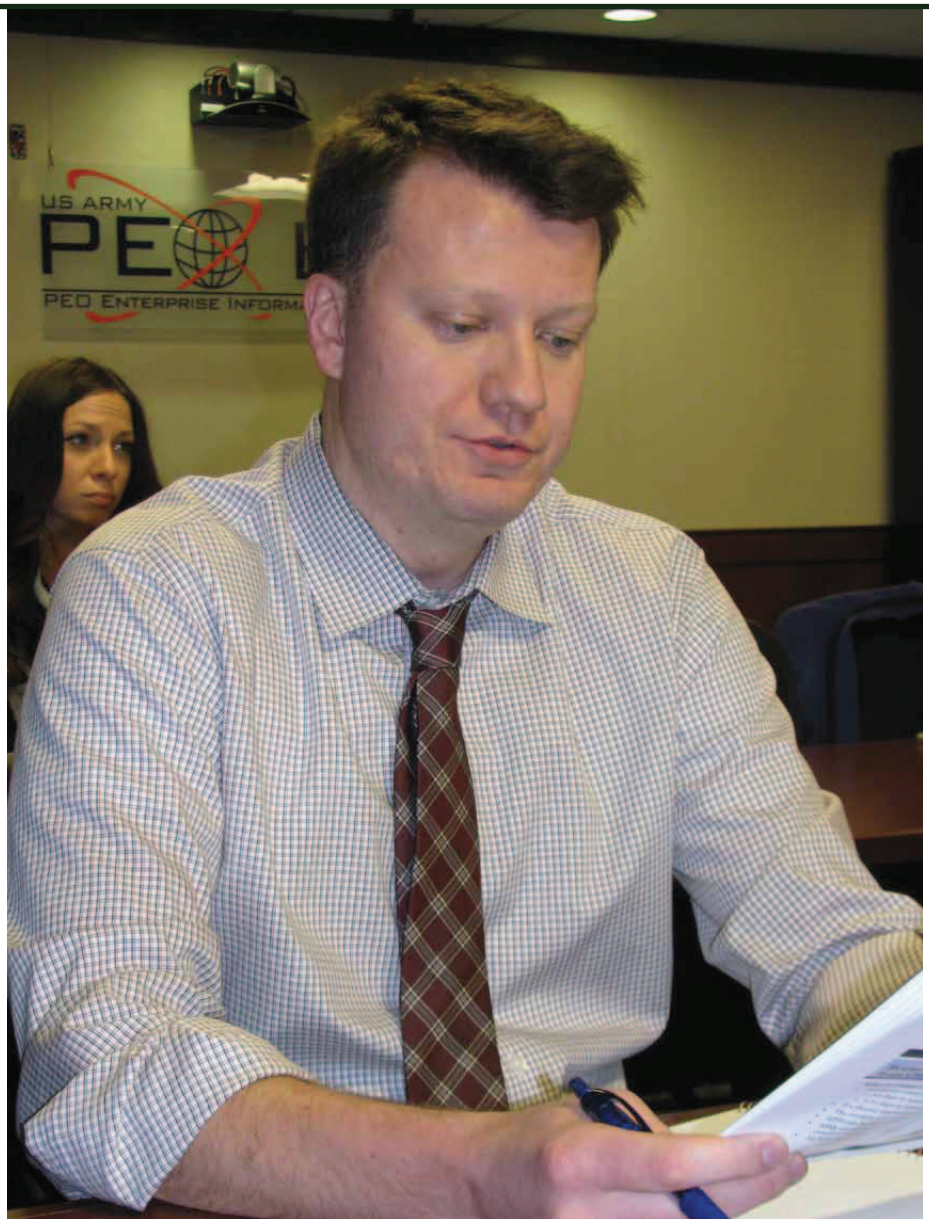
CHESS provides a no-fee flexible procurement strategy through which an Army user may procure commercial-off-the-shelf (COTS) IT hardware, software and services using an e-commerce process. CHESS offers simple, straightforward contract vehicles through its online Army ordering system, the CHESS IT e-mart.

CONSOLIDATED BUY

The CHESS Consolidated Buy (CB) program is a prime example of better buying power in IT. Now in its 16th buying period, the CB program realizes the Army's goal of reducing costs for hardware and software, as well as other purchasing priorities. In FY13 alone, CB sales accounted for more than 195,000 desktops and notebooks, with a sales total of $189.2 million and a cost avoidance exceeding $69 million.

In accordance with Army Regulation 25-1, "Army Knowledge Management and Information Technology," Army organizations are required to purchase all desktop and notebook computers through the Army CB unless an exception applies. CBs are open for ordering twice a year, from January to March and June to September.

The CB, which has achieved more than $350 million in cost avoidance since its inception in 2005, adapts continuously to customer feedback and changes in IT procurement demands. Starting in the CB12 buying period (January through April 2011), the Army added printers—multifunction printers in particular—to the products available for purchase. While it is not mandatory to purchase printers from the CB, the addition not only supported "going green" by eliminating multiple machines, thus saving energy and office space; it also offered customers a more complete bundle in a



A SURGE OF BUYING POWER
CHESS provides standards and IT enterprise solutions to all Army activities and organizations. Here, Cliff Stevens, CHESS software product leader, performs online training for IT professionals from Red River, TX, Jan. 16 at CHESS headquarters on Fort Belvoir, VA. Stevens addressed software licensing agreements as part of the training. (U.S. Army photo by Michael Dorsey)

streamlined contracting process, rather than having to generate a second contract action if printers were required.

Starting with CB15, CHESS added a category for tablets and slates to the CB to offer customers options that provide greater mobility. All tablets and slates meet network standards and run the Microsoft Windows-based Army Golden Master, allowing users to connect to the Army network, process For Official Use Only documents and obtain standard security patches. By contrast, most of the tablets purchased outside of CHESS are not approved for use on the Army network.

ENTERPRISE LICENSING AGREEMENTS

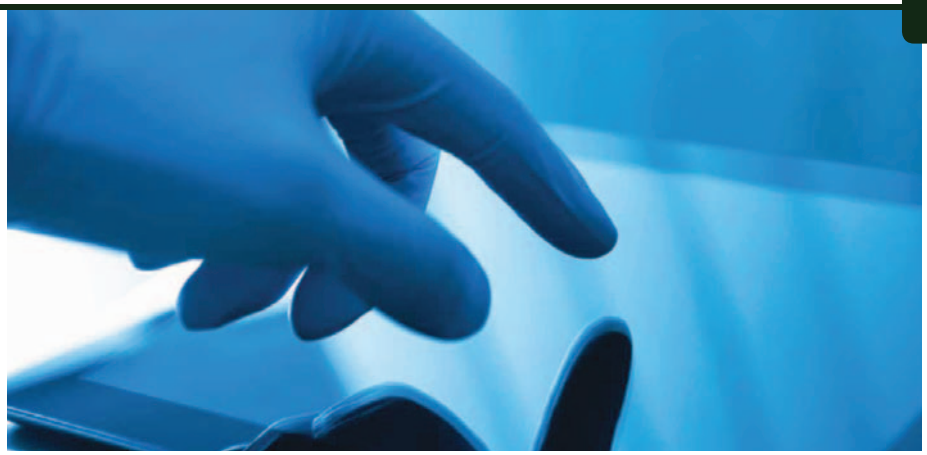
In addition to the ESAs under the DOD Enterprise Software Initiative program, CHESS participates in numerous enterprise licensing agreements (ELAs), which consolidate known license requirements, typically across programs or commands, and generate substantial cost savings and administrative efficiencies.

Notable ELAs in FY12 included the CHESS-led award for Armywide use of Windchill product life-cycle management software product and an Adobe PDF creation suite; and an ELA supporting PEO EIS and the U.S. Army Materiel Command (AMC) for Oracle products. CHESS also participated in several other ELA efforts, including multiple Oracle agreements for several commands, and supported the Army CIO/G-6 led effort to establish a joint Microsoft ELA.

The Army ELA for Windchill consolidated and upgraded more than 18,000 PTC Windchill licenses that standardized the bill of material across programs; locked in, for the next five years, a reduced maintenance fee and reduced purchase prices for any additional licenses; and achieved a cost avoidance of as much as $13 million over the first three years of the five-year agreement.

"It's a huge win for us, AMC and the whole Army," said George Wolfe, a DA civilian and CAE system engineer at Tobyhanna Army Depot, PA. "Over the next three years, Tobyhanna will realize savings of over $1.7 million."

By consolidating all existing Oracle contracts within AMC and PEO EIS, CHESS was able to eliminate more than 250 separate contract actions. Not only did this reduce the government's administrative costs for tracking and



FLEXIBLE SHOPPING
CBs are open for ordering twice a year, from January to March and June to September, and continuously adapt to customer feedback and changes in IT procurement demands. The next CB ordering period, CB17, begins June 17 and ends Sept. 30. (U.S. Army photo)

ensure that renewals were on time, but it also allowed for significant discounts on future licenses. The consolidation is projected to achieve a cost avoidance of $50 million over the three-year agreement.

On Sept. 25, 2012, the Army awarded an ELA that included Adobe Acrobat Professional and Live Cycle PDF Generator licenses and maintenance. This agreement covers all Army organizations including Army commands, Army service component commands, direct reporting units, the U.S. Army Reserve, Army National Guard and Army Corps of Engineers, organizations for which the Army is the executive agent, and all DA civilians and contractors conducting official business in direct support of the Army.

This ELA enables all users of prior Adobe Acrobat Professional versions to upgrade to the latest version, in compliance with U.S. Army Cyber Command directives. The CIO/G-6 provided initial funding of license requirements, and organizations will be responsible for out-year maintenance at greatly reduced costs, estimated at less than $4 per user. The agreement also consolidated the number of maintenance agreements across the Army into a single contract action.

PEO EIS encourages customers with large software requirements, especially those that have other customers across the Army, to contact CHESS about participating in an Armywide ELA effort.

NETWORTHY SOFTWARE

The latest CHESS initiative is the Information Technology Enterprise Solutions – Software (ITES-SW) procurement. The ITES-SW contract recognizes the current capability gap in the number of software products being purchased across the Army that have certificates of networthiness (CONs) from the Army but are not yet covered by a DOD ESI agreement, providing customers with leverage to obtain those software products and maintenance services in a centralized location. All products sold using this vehicle will have a CON, enabling immediate connection to the network without security risk.

The draft request for quote for this indefinite delivery, indefinite quantity procurement is expected to be released to industry in summer 2013.

ITES-SW capitalizes on the fact that Army contracting officers are already familiar with the CHESS program and the fair opportunity process using the IT e-mart. The procurement will allow for competition across functionality. It will also reduce or remove the need for customers to obtain a CHESS waiver for available products, and position the Army to execute future consolidation efforts for additional cost avoidance.

CONCLUSION

The CHESS IT e-mart contracts provide continuous vendor competition for best value and consolidation of requirements to maximize cost avoidance and leverage the Army's buying power.

These catalog-based contracts ensure that new products and offerings that comply with Army technical standards and policies can be rapidly added, subject to the previously competitively established catalog discounts. Decentralized ordering allows any contracting officer or government credit card holder to place orders using the IT e-mart.

The CB process is the most cost-effective way to fulfill user requirements for IT products. The CB also supports the CIO/G-6 strategy for acquiring products that comply fully with federal desktop computing regulations as well as DOD and Army standards for security and interoperability.

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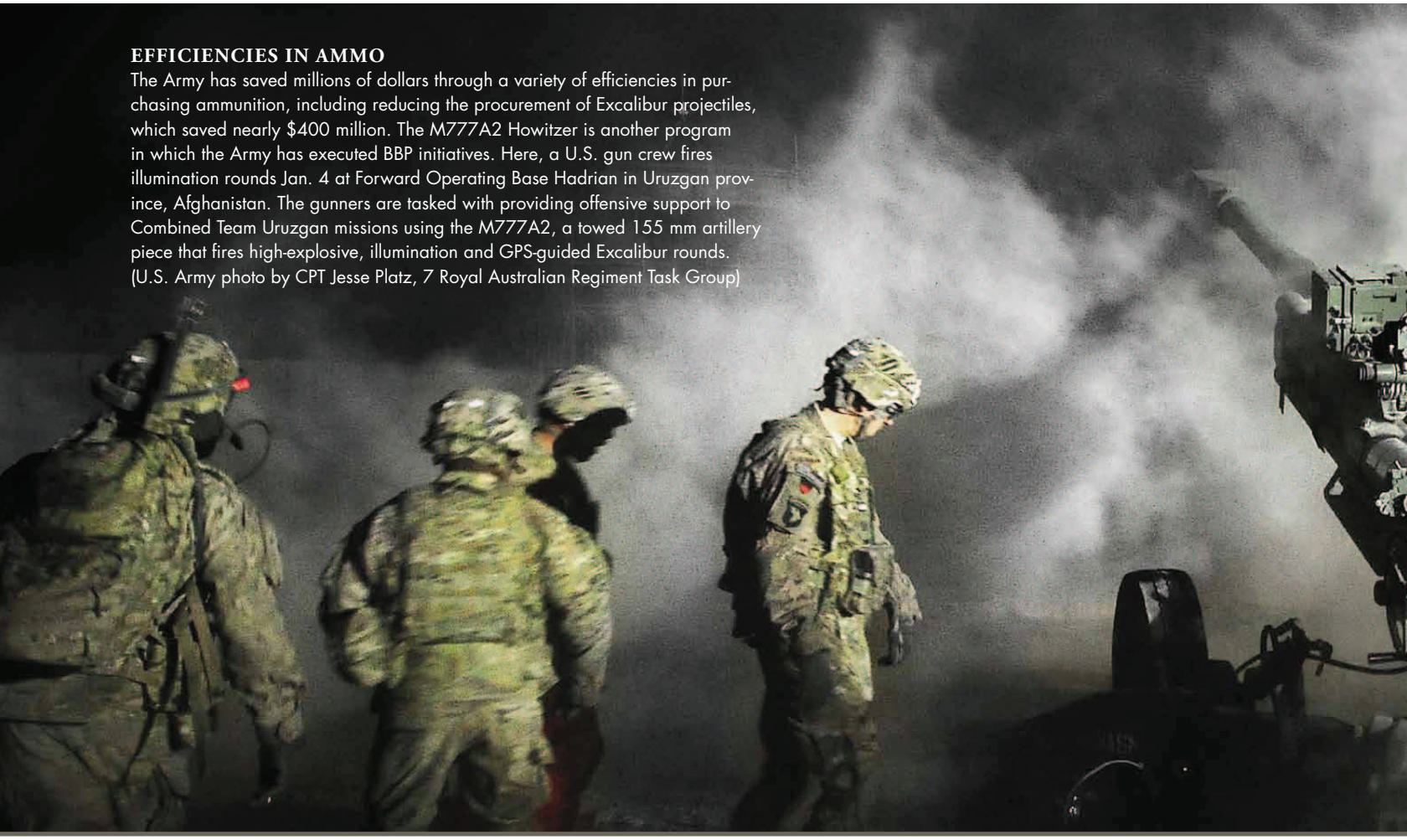
FROM THE DIRECTOR,
ACQUISITION CAREER MANAGEMENT
LTG WILLIAM N. PHILLIPS

BETTER BUYING POWER

Delivering cost savings and continuous improvement



EFFICIENCIES IN AMMO
The Army has saved millions of dollars through a variety of efficiencies in purchasing ammunition, including reducing the procurement of Excalibur projectiles, which saved nearly $400 million. The M777A2 Howitzer is another program in which the Army has executed BBP initiatives. Here, a U.S. gun crew fires illumination rounds Jan. 4 at Forward Operating Base Hadrian in Uruzgan province, Afghanistan. The gunners are tasked with providing offensive support to Combined Team Uruzgan missions using the M777A2, a towed 155 mm artillery piece that fires high-explosive, illumination and GPS-guided Excalibur rounds. (U.S. Army photo by CPT Jesse Platz, 7 Royal Australian Regiment Task Group)

In this fiscal environment, we all recognize the need to squeeze more value out of each dollar we spend. Better Buying Power (BBP), the ongoing two-year initiative from the Office of the Secretary of Defense, has proven a useful road map to institutionalize affordability and increase productivity across many sectors of military spending. As diligent stewards of our programs, we are uniquely positioned to carry out the vision for BBP 2.0. If done right, this effort will deliver not only cost savings, but also continuous improvement of our processes and products—meaning better support to Soldiers.

Since 2010, the Army has made great gains in embracing affordability, performing requirement trade-offs and improving test efficiencies. Following the tenets of BBP, we are streamlining requirements early in the acquisition process, incentivizing innovation, increasing competition and eliminating redundancy. In addition to the examples highlighted earlier in these pages by the Honorable Heidi Shyu, the assistant secretary of the Army for acquisition, logistics and technology, the Army Acquisition Corps has notched several successes in the first phase of BBP.

Our successes include millions of dollars in savings with the procurement of the 5.56 mm Enhanced Performance Round, the precision-guided Excalibur artillery round, and Abrams and Stryker contracts designed to reduce costs. These efforts are just a few of our accomplishments. There are many other successes under the BBP initiative.

A CULTURE SHIFT

These achievements are a credit to the workforce supporting each individual program, as well as evidence of a larger culture shift within the Acquisition Corps. At the ground level, we are now focusing on executability so that we pursue "achievable" programs and strive to maintain cost and schedule parameters.

When reviewing programs, we should be asking ourselves key questions related to the technical maturity of systems, such as: Where is the technology today? What is the maturity level? What are the risks associated with developing the technology? How long will it take to get to procurement or production? What is the right balance of risk and incentives for industry to get the results the Army wants? Given that we can't have it all, what are the trade-offs?

Take, for example, the Ground Combat Vehicle (GCV) program. By using analysis and feedback stemming from our nondevelopmental vehicle assessments and analysis of alternatives, the Army made requirement trades within the Capability Development Document to adequately address operational needs. These trades reduced cost, schedule and technological risk in a number of key areas.

In particular, we modified underbody protection and horizontal threats coverage against certain types of rocket-propelled grenades, as a way to adjust requirements and lower costs without reducing the vehicle's protective capability. We also refined reliability and lethality requirements and improved the turret design in a way that will increase operational effectiveness and Soldier safety. We also deferred some

PROCUREMENT SUCCESS
The Army's procurement contracts for the Abrams tank and the Stryker vehicle represent successes for BBP. Here, Soldiers with the 2nd Battalion, 8th Infantry Regiment, 2nd Brigade Combat Team, 4th Infantry Division (2/4 ID) prepare to assault an objective in M1A2 Abrams tanks Jan. 10 during a two-week field training exercise near Fort Carson's Camp Red Devil, CO. (U.S. Army photo by SSG Andrew Porch, 2/4 ID Public Affairs)

capabilities to future increments, such as target recognition aids.

This approach allows us to properly emphasize technical maturity within our components and subsystems by giving certain technologies the needed time to mature before we integrate them. It also saves money!

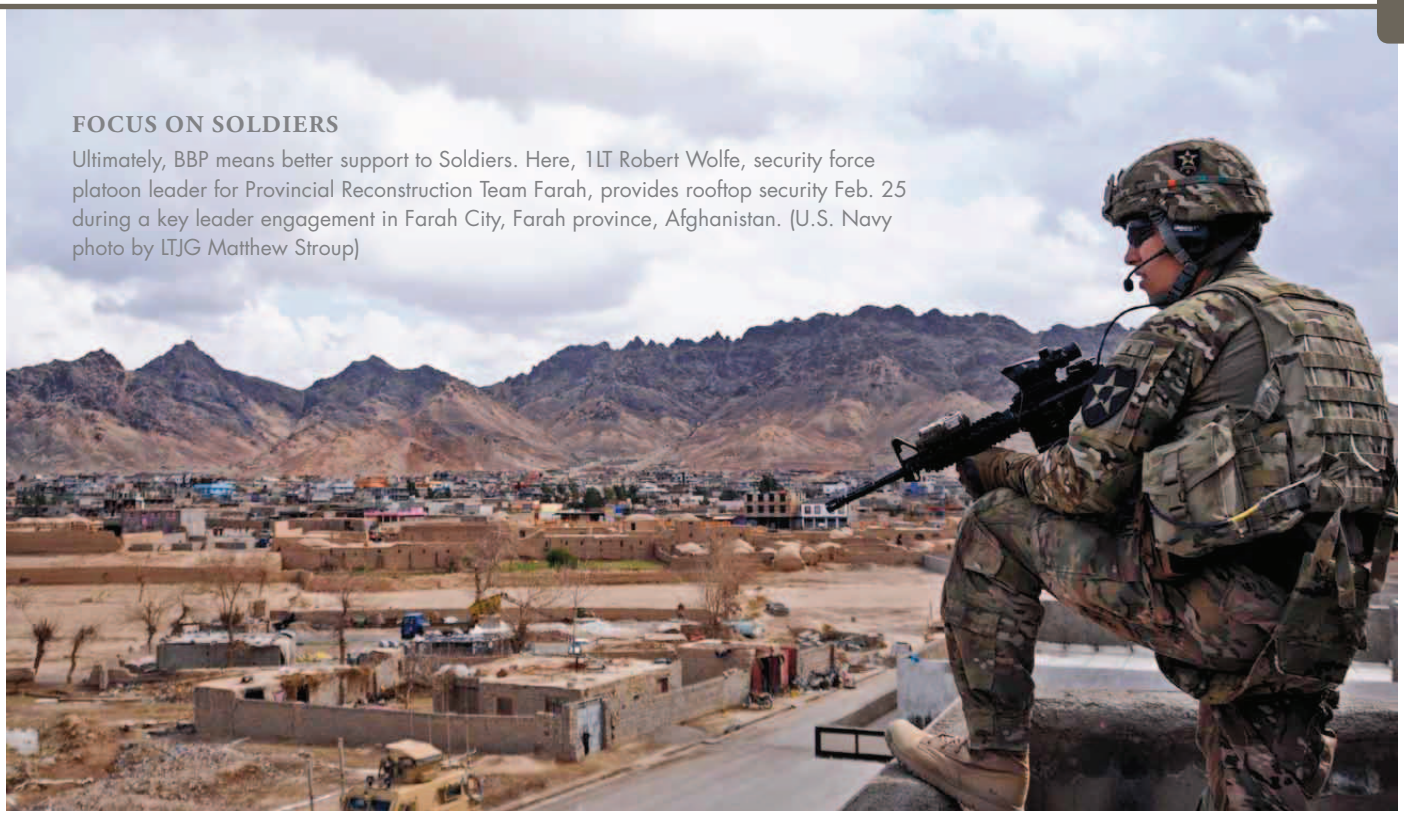
STREAMLINING TESTING

Alongside requirements trade-off actions, we are also applying BBP as we strive to improve test efficiency. In particular, we are looking closely at costs and striving to leverage developmental testing to reduce the degree of operational testing. For example, during numerous Paladin Integrated Management (PIM) program reviews, we identified ways to streamline tests and refine test requirements that eliminated redundancy and combined various test efforts. The program saved a total of $15.7 million and approximately 12 months of test range time. This drove efficiency and kept the program on track for a June 2013 Milestone C Defense Acquisition Board.

The U.S. Army Test and Evaluation Command, the Director, Operational Test & Evaluation, Army Staff and U.S. Army Training and Doctrine Command were key teammates in the PIM test efficiency effort. Collectively we established a working group that analyzed each proposal in terms of feasibility, suitability, acceptability, safety, risk, and approximate cost and schedule savings. In total, we implemented 27 different test efficiencies.

PIM is not the only area where we are taking a conscientious approach to testing. We have realized efficiencies across

THESE ACHIEVEMENTS ARE A CREDIT TO THE WORKFORCE SUPPORTING EACH INDIVIDUAL PROGRAM, AS WELL AS EVIDENCE OF A LARGER CULTURE SHIFT WITHIN THE ACQUISITION CORPS.



FOCUS ON SOLDIERS

Ultimately, BBP means better support to Soldiers. Here, 1LT Robert Wolfe, security force platoon leader for Provincial Reconstruction Team Farah, provides rooftop security Feb. 25 during a key leader engagement in Farah City, Farah province, Afghanistan. (U.S. Navy photo by LTJG Matthew Stroup)

numerous programs through what we call Test and Evaluation Master Plan reviews, wherein a variety of stakeholders pose and answer key testing questions with a mind to increasing efficiency. We also gained time and saved millions of dollars in the testing of Excalibur, GCV, Gray Eagle, the Stryker double V-Hull and Bradley. We still have much work to do here, and what's important is that every program manager look at his or her test strategy and seek efficiencies. PMs must review operational and test requirements, properly determine the level of program maturity and, when necessary, use Configuration Steering Boards to implement efficiencies through refined test requirements and system performance.

SAVING LIVES AND MONEY

When a contractor approached the Army with a proposal for significant savings on armor tiles for the Bradley Fighting Vehicle, the Army postponed the opportunity because the vehicle played such an important role in saving lives. Ultimately the Army and the contractor split a savings of $38 million through a value engineering change proposal. (U.S. Army photo)

CONCLUSION

As we go forward, I am confident that we will build upon our BBP progress and continue to create a more cost-conscious culture. Controlling costs, promoting competition, eliminating redundancy and other actions in BBP focus areas will require your help, dedication and professionalism.

Keep asking the difficult questions, and keep challenging yourself and our industry partners to do better and to think of ways to do things smarter. The more efficient we can be, the further the dollars will go to support our Soldiers. Thanks for your service!

THINKING BEYOND SYSTEMS
If the government can encourage competition at the component and subsystem levels, the author argues, it can bring down prices. Here, Tim Spivey (left), the process optimization manager for Anniston (AL) Army Depot's component repair and weapons value stream, talks to MG Michael J. Terry, commanding general, U.S. Army TACOM Life Cycle Management Command, about the depot's M2A1 .50-caliber machine gun program. (U.S. Army photo by John Makamson)

DRIVING COMPETITION

How to achieve better value for major defense acquisition programs already in production

by LTC T.J. Wright

The Defense Acquisition Community has received significant guidance and direction about delivering better value to the warfighter and taxpayer. Senior Defense leaders have charged us to "target affordability," "eliminate redundancy," "set shorter timelines," "drive productivity" and "find better ways to do more without more."

Almost three years ago, Dr. Ashton Carter, then-Under Secretary of Defense for Acquisition, Logistics and Technology (USD(ATL)), signed the first Better Buying Power (BBP) memorandum for obtaining efficiency and productivity in defense spending. These concepts challenged the entire Defense Acquisition Enterprise to do things smarter. Recently, in the Better Buying Power 2.0 memorandum, Mr. Frank Kendall, the current USD (AT&L), highlighted the significant strides the acquisition community has made, but that we have more to do.

What else can be done for mature systems in production? The short answer is to put U.S. government buyers in a better position to influence cost and price, compete where possible and establish conditions wherein competition can affect cost and price.

Competition is one of the fundamental driving factors that enable the government to acquire better-performing, more reliable, higher-quality systems at lower prices. Competitive prices not only make products more affordable, but also incentivize productivity, efficiency and innovation among competitors. The objective for mature systems in production is to establish the conditions to compete where possible until the conditions naturally allow competition at the system level.

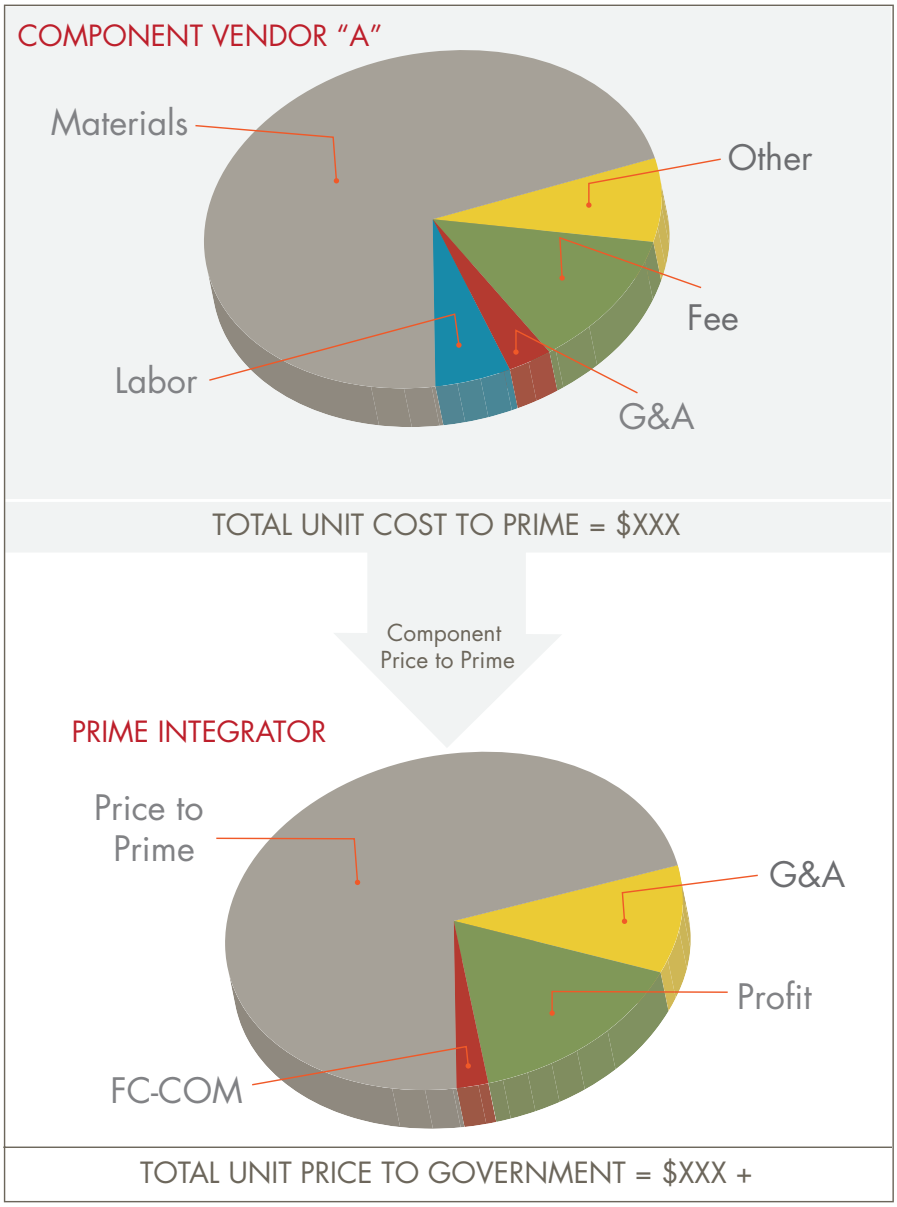
There are specific steps that we in acquisition can take to achieve this, first by breaking down the problem into its logical components. Following are the key questions to address, with my observations based on experience as a product manager (PM) of a major defense acquisition program in production.

Q. Why not compete at the system level first?

A. The problem is that once production is ongoing, competition requires additional time and resources that could adversely affect delivery of the product.

Competition is tough for major weapon systems in production. Current competitive conditions are less than favorable for both government and industry for major systems in production. A contributing factor is the consolidation of the major defense companies during the 1990s, such as the merger of Lockheed Corp. and Martin Marietta Corp. to form Lockheed Martin Corp. That period of consolidation left only five major defense

FIGURE 1



Data taken from FRP# - DD Form 1921 & 1921-1 (Notional)
G&A - general and administrative
FC-COM - Facilities Capital Cost of Money

Proposals, contracts from previous production years, and the Form 1921s that the system integrator and major subcontractors are required to submit after contract award can provide a wealth of data with which to identify cost drivers, such as labor and material costs and direct and indirect costs. (SOURCE: PM Precision Guided Missiles and Rockets)

contractors able to compete on major weapon system contracts.

During the same period, the government moved to require the use of performance statements outlining desired features and performance, as opposed to directive specifications. Subsequently, the number of contractors with the know-how and capability to produce major weapon systems decreased significantly.

For example, in certain weapon portfolios, only one or two companies remain with the expertise to deliver a product on time and at cost, and they have safeguarded their role as the only viable system integrators. These few contractors now own the system data rights to the drawings, work procedures, instructions and tooling, and they know the "secret sauce" for everything in between. Unfortunately, this continues to be a challenge for mature systems and systems based on existing technologies.

Q. These conditions make it very difficult to influence cost and price, so where do we start in this environment?

A. Work from the ground up: Leverage and build the data available to establish competitive conditions below the weapon system level.

Determine the start point. Conducting cost forensics—gathering all the programmatic data across appropriations to determine the root cause behind the cost and price for product and product support—from the system down to the component level will help reveal the system's true cost drivers. Independent companies can do this very well, but it is not cheap. The other option is to use the subject-matter experts within the program management office (PMO), along with the available information.

Resources include proposal volumes and contracts from previous production years. Even more revealing information lies in the initial Form 1921s, Cost Data Summary Reports, that the system integrator and major subcontractors are required to submit to the Defense Cost and Resource Center after contract award. There is definitive information in the final 1921s. These documents provide much of the information on "actuals" that is needed to analyze cost data, such as labor and material costs and direct and indirect costs, all of which can be stratified to highlight the true cost drivers quickly. (See Figure 1.)

Targeting the biggest cost drivers provides the best return on investment in identifying where to establish competitive conditions. The more production contracts there are, the more data are available for analysis. Stratifying the data will also provide valuable insight to the technical evaluation team, as well as arm the procuring contracting officer (PCO) to negotiate upcoming contracts. Once the system cost and price drivers are identified, they can be prioritized and targeted to determine what to compete first; however, the legal conditions are also an important factor to consider.

Q. What right does the government have to compete?

THE SUM OF MANY PARTS

The competitive landscape has changed over the past 20 years with the consolidation of defense contractors. But by looking at primary cost drivers and then making those elements of a program subject to competition, the Army can still drive down costs. Here, 2LT Will Lamb and SFC Eddie Isaac inspect a variety of new weapons Oct. 2, 2012, at the Military Equipment and Technology Expo on Joint Base Lewis-McChord, WA (U.S. Army photo by SGT Adam Keith, 19th Public Affairs Detachment)

A. This depends on the status, accuracy and completeness of the system data rights.

Continuously pursue data rights. Challenging administrative markings is frustrating work, but it is critical to setting conditions for competition throughout the system life cycle and for future increments. It can also require significant staff time within the PMO, for the government PCO and for industry legal representatives. Additionally, physical configuration audits take time and money to execute, to ensure that the drawing packages are free and clear as well as accurate.

Acquiring the data rights at the system level may be years away; however, some components and/or subsystems may be significantly further along in the

THE STRONGEST FORCE MULTIPLIER FOR ACHIEVING THE DESIRED BBP OBJECTIVE IS AN ENVIRONMENT IN WHICH THE GOVERNMENT DRIVES DOWN COST AND PRICE THROUGH COMPETITION, OR BY ESTABLISHING THE CONDITIONS FOR COMPETITION IN WHICH IT CAN AFFECT COST AND PRICE.

process of acquiring the rights, allowing competition at a more manageable level.

Q. Prime contractors compete at the component level to lower their cost and price; why can't the government compete at the subsystem or even a lower level?

A. It can, by qualifying alternate sources of materials.

Establish competitive factors where it makes sense. Depending on the weapon system and performance requirements, material cost drivers may be one of the highest-cost and lowest-risk items to qualify. This is one area to address if component or subsystem data rights do not allow competition. It is also an area where it is incumbent on the PMO to write contract solicitations and requirements that are not overly restrictive to a single source.

Specialty chemical and metal prices continue to rise, especially where there is only one supplier. In this case, alternate material qualification is needed to mitigate production risks should some sort of industrial accident occur.

For example, in May 2012 one of the two U.S. nitric acid producers suffered an explosion that could have had a significant impact on the ability to produce enough nitric acid to meet delivery requirements if there were no alternate source. Working with the prime and subcontractor in qualifying an alternate material source also incentivizes the incumbent provider to pursue lean manufacturing or rightsizing operations to meet current market demand. If it is too costly for another U.S. material provider to rightsize or streamline processes in order to operate at a lower cost, look abroad; many foreign producers have found smart ways to produce more efficiently. This option has to consider the effect on the U.S. industrial base and any national security concerns. Engaging the service's industrial base policy representative can help navigate these hurdles.

Q. These are just a few possibilities to consider in establishing competitive conditions to lower production price. Are there other subsystem areas to address?

A. Qualify alternate sources of components or subsystems.

As with materials, components and subsystems provide opportunities to qualify additional sources to establish competitive conditions. There may also be an opportunity to encourage dual sourcing by prime contractors. If the prime is unwilling to qualify another source, the government has the option to do so, then to either dual-source or compete at the subsystem or lower level and provide government furnished equipment (GFE) to the system integrator. "GFEing" subsystems and below will reduce the significant burdened rate added at each level up to the prime contractor, but comes with the responsibility and the requirement to use internal resources to manage it.

Qualifying an alternate component and subsystem source is by no means easy. Critical information required to pursue this includes the data rights status, performance risk, the cost to qualify and compete, and the projected return on investment.

Q. What happens if there aren't alternate commercial sources to compete?

A. Leverage government resources to bridge the gap.

AIMING FOR COMPETITION

Competing wherever possible is one of the tenets of BBP, to find the best value for the taxpayer while providing Soldiers with cutting-edge equipment. Here, a 519th Military Intelligence Battalion Soldier checks his M-249 automatic rifle sight before engaging a paper target downrange in Spin Boldak, Kandahar province, Afghanistan, Feb. 8. (U.S. Army photo by CPT Lindsay Roman)

Identify the resources available to create competitive pressures, and use them. If there aren't any other capable commercial sources, in some cases Army depots can provide, with the help of the PMO, an alternate source to establish work procedures, operating instructions and drawings.

Some depots have the capability to conduct system modifications, develop and produce alternative components and subsystems, and even perform systems-level integration. While depots are not generally production facilities, they have the manpower and knowledge within their organic structure to adapt and be successful. The depots provide an alternate system for building components all the way up to full systems, while enhancing their own organic capability.

Other assets to consider, where data rights allow, are government-owned contractor-operated facilities. These facilities, working in conjunction with the PMO, provide another resource for the government to build a capability that didn't exist before, while also providing competitive conditions to help control cost and price where no other commercial source exists.

CONCLUSION

There are numerous ways to compete, or to establish competitive conditions for weapon systems in production, even when competition is not possible at the system level.

The goal of BBP is very clear: We are to deliver better value to the taxpayer by improving the way we do business. Continuous process improvement is now a part of everything we do, and the Defense Acquisition Community will continue to find innovative ways to reduce expenditures for products and product support.

The strongest force multiplier for achieving the desired BBP objective is an environment in which the government drives down cost and price through competition, or by establishing the conditions for competition in which it can affect cost and price. This is at the core of delivering more capability to the warfighter at the best value to the taxpayer.

For more information, contact the author at ***todd.j.wright@us.army.mil****.*

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FORCE MULTIPLIER

The acquisition support coordination officer: assuming a deployed role on today's battlefield

by MAJ Corey Hemingway

There has been a continuing debate among Soldiers within the U.S. Army Acquisition Corps (AAC) about our competence to transition from our initial years as Soldiers in a line unit to business practitioners who can execute a program with regard to cost, schedule and performance. AAC personnel are required to obtain business credits to become members, earning certifications based on education and time spent in a job managing contracts or executing acquisition programs.

So these questions arise when an acquisition officer is required to deploy in support of a corps- or division-level headquarters: What is my job, and how can the unique skills of an acquisition officer be a force multiplier to a combatant command (COCOM)? What doctrine can I reference for deployed acquisition personnel? How can I explain my role and mission to the average command and staff organization? These are important questions that acquisition officers must be able to answer before their skills can be of maximum use to the COCOM.

DELIVERING THE GOODS
With civilians, both government and contractor, an integral part of the modern battlefield, AAC personnel are uniquely qualified to oversee the necessary coordination between the military and civilians. Here, SGT Michael Bauder, equipment movement and control NCO for Task Force Central, shows a driver in Douala, Cameroon, where to locate a Satellite Transportable Terminal Feb. 16. (U.S. Army photo by SSG Amy Wieser Willson, North Carolina National Guard Public Affairs)

SHOWING THE WAY
AAC officers can coordinate commercial support and capabilities with military equipment and requirements to attain mission success. Here, a merchant moves plastic wares Nov. 7, 2012, from the Shur Andam Industrial Park in Kandahar province, Afghanistan, by motorized tricycle on an unpaved road, underscoring the need for a paved road to serve the industrial park. (Photo by Jasmine Chopra-Delgadillo, U.S. Army Corps of Engineers)

This article and its recommendations, based on my experience serving in Iraq, are intended to provide a blueprint and lessons learned for the acquisition community to posture itself better in support of future conflicts.

I deployed to Iraq from July 2011 to January 2012 as the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)) Director for Iraq, with the mission to support the drawdown of U.S. Forces – Iraq. During the time I coordinated the drawdown of product- and program-managed (PM) equipment and personnel, I learned numerous valuable lessons that boil down to two important capabilities we can bring to the battlefield.

The first is coordinating commercial support and capabilities with military equipment, and translating them into requirements. The second is communicating with the government and commercial headquarters in the continental United States (CONUS) and the contracting officer's representatives (CORs) with legal authority. I also observed a major capability gap within our policy and/or doctrine that I believe the Army can fix.

CRITICAL CAPABILITIES

The first capability that the AAC officer can bring is coordinating commercial support and capabilities with military equipment and requirements to attain mission success. During the past 10 years, the Army has procured an enormous amount of commercial-off-the-shelf equipment, and fielded rapid acquisition capabilities, as a result of Joint Operational Needs Statements and Operational Needs Statements. This equipment requires government civilians or support contractors to operate and sustain.

As the overall visibility of contractors on the battlefield became apparent in August 2011, there was a requirement to identify critical equipment quickly, as well as the civilian contractor workforce necessary to support the equipment. There was also the challenge of communicating and translating contractor support to military requirements based on the total amount of non-standard equipment in Iraq necessary to support overall corps-level operations.

The second capability that the AAC officer can bring is communicating with the CONUS government and commercial headquarters and the CORs. There is a common misconception among military officers in the operations field that the field service representative or contractor lead for a company is the program or product manager for a particular company. In other words, most military operators do not know with whom they should communicate to obtain the desired results. The answer is: the acquisition officer, who has the reachback capability to get results. Acquisition officers understand

contracting language and can communicate the limitations of the contract to the warfighter concisely, or work with the right personnel to adjust the contract in order to obtain the right capability for the warfighter.

In most cases, a COR for a PM does not reside in the theater of operations, leaving the ASA(ALT) director and/or the U.S. Army Contracting Command representative to research and find the responsible organization that can fix a particular issue or obtain information that is necessary to support the warfighter.

LESSONS LEARNED

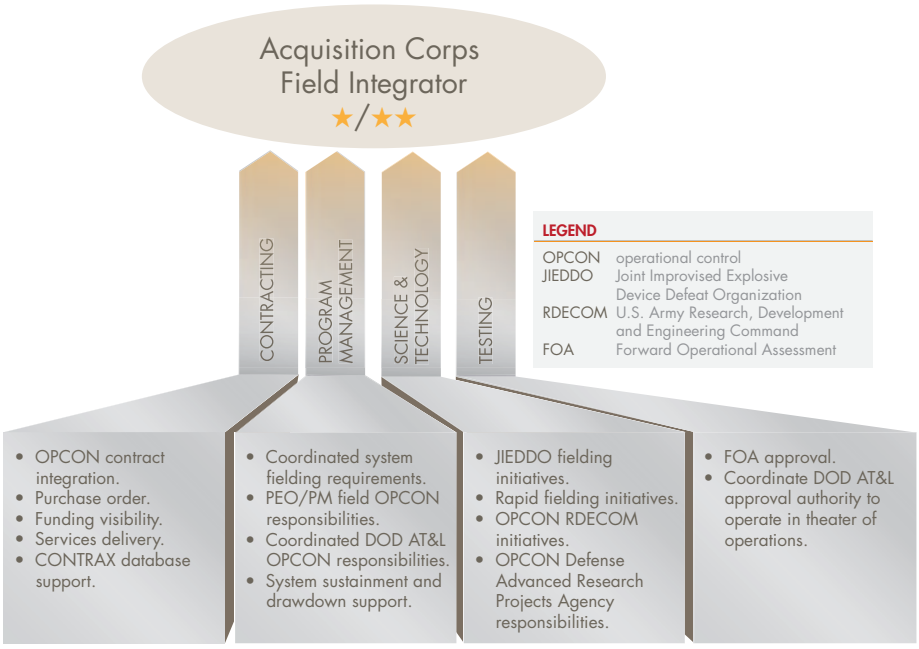
These two capabilities bring me to my final point, on a gap that exists in our ability to support the warfighter. While I was in Iraq, we did not have a central coordinator to bring the capabilities of the contracting officer, science and technology (S&T) advisor, testing analyst and PM representative into one common operating picture for the COCOM.

Over the course of the wars in Iraq and Afghanistan, colonels, lieutenant colonels and GS-15s were deployed to work in their specific areas to provide support to the warfighter. Consider the fact that the AAC has deployed an ASA(ALT) director, forward test director, contracting commander and an S&T Acquisition Corps advisor, all at the same time, to support the COCOM and their respective organizations. Although these personnel may communicate with one another, the COCOM does not have a clear, concise picture of how each relates to the others.

The most important lesson learned in Iraq is to have a senior AAC officer with access to the COCOM commander who can integrate, synchronize and communicate acquisition capabilities in support of the commander's intent and

A LOAD OF ABILITIES
Acquisition officers deployed in support of corps- or division-level headquarters have unique skills that can greatly enhance a COCOM's capabilities. Here, U.S. Soldiers await takeoff on a U.S. Air Force C-17 Globemaster III at Bagram Airfield Jan. 29 after completing their tour in Afghanistan in support of Operation Enduring Freedom. (U.S. Army photo by 1LT. Henry Chan, 18th Combat Sustainment Support Battalion)

FIGURE 1



As the author learned from his deployment to Iraq, a senior AAC officer with access to the COCOM commander can integrate, synchronize and communicate acquisition capabilities in support of the commander's intent and objectives. (SOURCE: MAJ Corey Hemingway)

objectives. This person would need the capability and authority to have operational control of all forward-deployed acquisition personnel (with specific limitations), communicate with senior-level general officers and Senior Executive Service personnel, and integrate the total deployed capabilities of the AAC.

Figure 1 shows how the proposed acquisition support coordination officer would provide support to the COCOM. I recommend that these areas of support be considered the acquisition lines of operation and that we develop a deployed doctrine focusing on these particular areas.

CONCLUSION

Most Army operators understand the role of the AAC as that of materiel developers. However, we are more than that. We are acquisition support coordinators on the modern battlefield of commercial services, wherein civilians in theater provide operations and sustainment support to meet our demand for high-tech equipment for the warfighter.

We have come to depend on these services to maintain our force protection capabilities and information dominance, which are critical on the battlefield. We provide logistics support and field emerging warfighting technologies in support of urgent requirements. Finally, we provide forward operational assessments to assess new capabilities delivered by the PM.

We are an important force multiplier to the COCOM that can influence a battlefield just as any other Soldier executing the mission.

For more information, contact the author at ***corey.hemingway@us.army.mil****.*

The views expressed in the article are those of the author and do not reflect the official policy or position of DA or the U.S. government.

MAJ COREY HEMINGWAY is a DA systems coordinator for the ASA(ALT). He holds a B.S. in criminal justice from Albany State University and an M.S. in project management from the Florida Institute of Technology. A member of the AAC, Hemingway is Level III certified in program management and Level I certified in information technology.

BREAKING THE LANGUAGE BARRIER

Acquisition officers understand contracting language and can communicate the limitations of a contract in order to obtain the right capability for the mission. Here, French-speaking Josue Onguene Ayissi (center left) translates for MAJ Jean Nko'o (center right), head of security for the Cameroon Army Engineer Base, CWO Robert Sandberg (left), security specialist with the 300th Military Intelligence Brigade, and CPT Andrew Denno, anti-terrorism/force protection officer with the 231st Brigade Support Battalion, Feb. 13 in Douala, Cameroon. (U.S. Army photo by SSG Amy Wieser Willson)

GARBAGE *to* FUEL

Trash-to-fuel generator, battle-tested in Iraq, shows long-term potential

by Mr. Don Kennedy

The year was 2008, and with the ongoing war, Iraq was a dangerous landscape for Soldiers on the ground, especially convoys traveling to and from base camps. Soldiers transporting fuel frequently encountered roadside bombs and enemy ambushes. Those risks can now be reduced with the Tactical Garbage to Energy Refinery (TGER) prototype.

"If you're a forward operating base, you don't want a local contractor coming in to haul your garbage out, because you don't know if they're good guys or bad guys. You also don't want to be hauling fuel in, because those convoys are targets and risk the lives of Soldiers and contractors," said Dr. James J. Valdes, the Army's scientific advisor for biotechnology at the U.S. Army Edgewood Chemical Biological Center (ECBC), Aberdeen Proving Ground (APG), MD. ECBC is the Army's principal research and development center for chemical and biological defense technology, engineering and field operations.

For 90 days, Camp Victory in Baghdad was home to the first two prototypes of TGER, deployable machines tactically designed to convert military field waste into immediately usable energy for forward operating bases (FOBs). The trailer-mounted biorefinery system uses hybrid technology to support a 550-person unit that generates about 2,500 pounds of trash per day; it converts about 2,000 pounds of that garbage—paper, plastic, packaging and food waste—into electricity using a standard 60-kilowatt diesel generator.

THE PRESSING PROBLEM

At the height of the war in Iraq, eight incinerators were operating around the clock to burn waste generated by Camp Victory, according to Valdes. Nearly 12,000 gallons of fuel per day were needed to power the incinerators.

"It was very expensive. During the expeditionary phase of warfare, it can cost as much as $400 per gallon for fuel … because the fuel has to be flown in by plane or helicopter. It's also a security risk," Valdes said.

The senior technologist identified a need to generate power tactically for small units in theater, using a method that would not just dispose of trash but could also produce energy to sustain base camps, eliminate the cost burden and reduce security hazards. Camp Victory provided the opportunity to test the TGERs in theater.

"We picked a forward operating base in Iraq because we wanted to really stress the system. All other waste-to-energy systems had been tested in laboratories or under ideal conditions and temperature climates. What we really wanted to do was stress it with heat, sand and real-world trash in a low-infrastructure environment," Valdes explained.

"You know that old Chinese saying, 'Be careful what you wish for, you might get it'? Well, we got it. We learned an awful lot over there about what works, what doesn't work and what'll break."

BLENDING TECHNOLOGY

TGER's hybrid technology uses thermochemical and biocatalytic components to produce two different kinds of fuel. The thermochemical component turns trash into synthetic gas through a gasification process, while the biocatalytic component produces ethanol from liquid waste. The two different fuels are then blended together to power the generators.

Of the lessons learned while the TGER was deployed in Iraq, the most valuable was that the downdraft gasifier had a tendency to get clogged if there was too

ENVIRONMENTALLY FRIENDLY

The trailer-mounted TGER biorefinery system uses hybrid technology to convert garbage—paper, plastic, packaging and food waste—into electricity using a standard 60-kilowatt diesel generator, all with a zero carbon footprint. (Photos courtesy of ECBC Communications)

TURNING WASTE INTO ENERGY

Army civilian technicians operate the TGER 2.0 prototype during a demonstration in September 2012 at APG. Testing of the TGER system resulted in modifications to make it more efficient.

much plastic in the fuel pellets. In addition, a large percentage of the synthetic gas was inert and could not be used as viable fuel. As ECBC's project director for TGER, Valdes led a team that successfully re-engineered a new prototype, TGER 2.0, to address concerns that surfaced during testing.

A horizontal gasifier with an auger device was developed to rotate the trash, eliminating the mechanical step of pelletizing it. The TGER 2.0 prototype also injects steam into the gasifier, which allows a larger conversion of output gas to become energetic. According to Valdes, the old system produced 135 BTUs (British thermal units) per cubic foot of gas, whereas the TGER 2.0 prototype produces 550 BTUs, more than tripling the amount of usable energy.

TGER 2.0 also features an automated interface with a touch-screen panel, making it easier for workers to input information and monitor every part of the machine, from oxygen levels in the gasifier to ethanol production and power output. It used to take three technicians to operate the machine. Now it takes two people: one to feed the garbage and another to monitor progress. Valdes hopes that as the prototypes advance, TGER eventually could require only one technician or Soldier to operate.

The advanced prototype was shipped back to the manufacturer for modifications after a final 80-day field trial at APG, where the green technology was tested to see how long it could run at maximum garbage input. The result: Within two hours of powering on, TGER 2.0 can

THE SECOND GENERATION

The TGER 2.0 prototype was developed after the original TGER 1.0 trash-to-fuel generator was tested at Camp Victory in Iraq in 2008. In response to issues raised during testing, TGER 2.0 features improved technology for rotating the trash, greater conversion of output gas into usable energy and automation that reduces the manpower needed for operation.

"IF YOU'RE A FORWARD OPERATING BASE, YOU DON'T WANT A LOCAL CONTRACTOR COMING IN TO HAUL YOUR GARBAGE OUT, BECAUSE YOU DON'T KNOW IF THEY'RE GOOD GUYS OR BAD GUYS. YOU ALSO DON'T WANT TO BE HAULING FUEL IN, BECAUSE THOSE CONVOYS ARE TARGETS AND RISK THE LIVES OF SOLDIERS AND CONTRACTORS."

COMMERCIAL POTENTIAL

The TGER system can support a 550-person unit that generates about 2,500 pounds of trash per day, converting about 2,000 pounds of that garbage. With proven benefits for Army FOBs, the prototype may also be useful in situations involving a high volume of garbage and low amounts of electricity, such as oil and mining operations, campsites, hospitals, mess halls and areas recovering from natural disasters.

make synthetic gas that enables a generator to run at about 75 percent power. Within 12 hours, alcohol is produced and blended with the synthetic gas to run the generator at full power at a steady state.

HARNESSING NATURE

As part of the U.S. Army Research, Development and Engineering Command, ECBC has been pursuing opportunities to address critical issues for the warfighter with greater efficiency and productivity. Biotechnology is one area that Valdes is tapping into.

"Over the billion years or so that we've had life in various forms on this planet, nature has evolved ways to manufacture very complex things, from chemicals to people," Valdes said. "Bio-manufacturing is the ability to harness nature to manufacture things that you cannot produce through synthetic chemistry. It's harnessing the power of nature and the information in the genes to make products that are very difficult or impossible to manufacture chemically."

The environmentally friendly TGER 2.0 has a zero carbon footprint, reducing the volume of waste in a 30:1 ratio. For example, 30 cubic yards of trash becomes one cubic yard of ash, a benign soil additive tested by the U.S. Environmental Protection Agency that is safe enough to use for rose bushes.

CONCLUSION

The new TGER prototype is useful not just in military applications; it also could be transitioned to the commercial sector, said Valdes.

"Longer term, we will be talking to the PMs [project managers] about transitioning it, but we'll also be talking to some companies that support oil and gas operations in places such as Mongolia and parts of the world that are difficult to have camps in," he explained.

Oil and mining operations, campsites, hospitals, mess halls and even areas recovering from natural disasters such as Hurricane Sandy are just a few of the places where the green technology could prove beneficial. ECBC and SAIC recently entered into a cooperative research and development agreement to speed commercialization of the technology.

"TGER is geared toward a smaller base camp, but industrial operations start off small and build up. They still have to get rid of garbage, and they have to somehow get energy into remote outposts. If you think about it, there are far more commercial opportunities for TGER than there are Army applications," Valdes said.

ECBC and SAIC are also working with TGER Technologies Inc., Defense Life Sciences LLC and Purdue University.

For more information about ECBC, visit ***http://www.ecbc.army.mil/*** *or call 410-436-7118.*

MR. DON KENNEDY is the communications and public affairs officer for ECBC at APG. An eight-year veteran of the U.S. Navy, he has also served as chief of media production at the U.S. Army John F. Kennedy Special Warfare Center and School, and managing editor for the Mid-Atlantic region of the Navy's largest newspaper, The Flagship. He holds a B.A. in English and history from Christopher Newport University.

FROM THE DIRECTOR,
U.S. ARMY ACQUISITION SUPPORT CENTER

SUSTAINING WORKFORCE PROFESSIONALISM

In previous commentaries, I provided an analysis of U.S. Army Acquisition Support Center (USAASC) efforts to strengthen the Acquisition, Logistics, and Technology (AL&T) Workforce under the guidance of the Honorable Frank Kendall, the undersecretary of defense for acquisition, technology and logistics (USD(AT&L)). In this issue, we'll take a look at how Better Buying Power (BBP) 2.0's key focus area "Improve the Professionalism of the Total Acquisition Workforce" ensures that essential warfighting capabilities are delivered within the constraints of a declining defense budget by better managing the costs of acquisition.

In November 2012, Kendall introduced BBP 2.0, the next step in the process of continuous improvement. (See related article on Page 20.) When Kendall took over as the acting USD(AT&L) in 2011, he expressed six priorities: support ongoing operations, achieve affordable programs, improve efficiency, strengthen the industrial base, strengthen the acquisition workforce and protect the future. BBP 2.0 is consistent with these goals and priorities.

Craig A. Spisak
Director, U.S. Army Acquisition Support Center

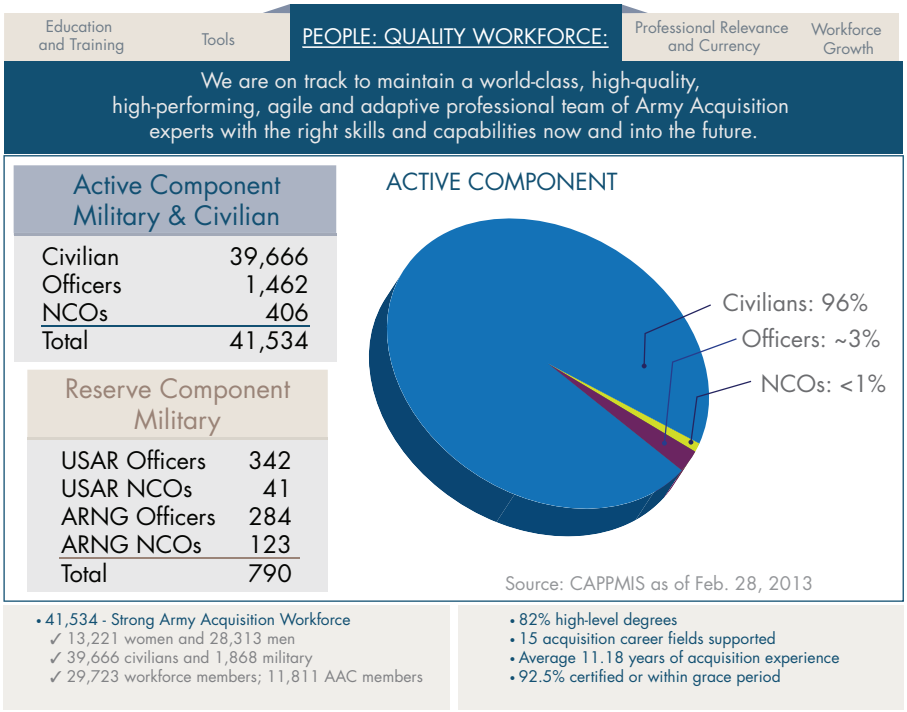
Our goal as the U.S. Army Acquisition Corps (AAC)—focusing on strengthening the acquisition workforce as a tenet of BBP 2.0—is to identify and share new practices, rejecting or modifying the ideas that turn out to be impractical or ineffective. In addition, we will measure our own performance and try to learn from those who most successfully acquire products and services for our warfighters. The sustained professionalism of our acquisition workforce will keep us moving in this direction. We remain engaged with the highest levels of USD(AT&L) so that defense stakeholders buy in to our initiatives. We also are communicating with our sister services and capturing Joint efforts to ensure success.

LEADERSHIP GOALS

Our AL&T workforce professionals are essential to changing the way we provide critical capabilities to the warfighter, and to DOD's continuing effort to deliver better value to the taxpayer by improving the way we do business. In my role as the deputy director for acquisition career management (DDACM), my primary focus is seeing that the DACM's goals for the AL&T workforce are articulated. For FY13, the Army DACM has instituted the following overarching goals with a focus on strengthening the AL&T workforce as per the BBP 2.0:

- **Secure a Quality, Agile and Adaptive Acquisition Workforce**
  - Monitor the Human Capital Strategic Plan (HCSP)—win the "war" for talent.
  - Attract the best and brightest—"hire for life."
  - Manage the Defense Acquisition Workforce Development Fund (DAWDF) requirements—ensure flexibility for fulfilling acquisi-

FIGURE 1



PEOPLE MAKE THE WORKFORCE

The Army AL&T Workforce is a reflection of its people. This profile shows their skills and experience. (SOURCE: USAASC)

tion workforce growth and critical acquisition skills and capabilities.

- **Sustain the Professionalism of the Army Acquisition Workforce**
  - Ensure world-class Army contracting capabilities.
  - Recognize and reward excellence and expertise.
  - Develop innovative leadership development programs.
  - Identify acquisition personnel with leadership potential.
- **Communicate, Coordinate and Collaborate with Army Commands and Senior Leaders**
  - Host quarterly high-level Defense Acquisition Workforce Improvement Act (DAWIA)-focused forums.
  - Work with command and organization acquisition career management advocates to ensure collaboration.
- **Acquisition Workforce Metric Monitoring Target Date: September 2013**
  - Achieve a 94 percent rate of DAWIA certification or within the grace period.
  - Ensure that 95 percent of the acquisition workforce attains 40 Continuous Learning Points (CLPs); 80 CLPs are required by the end of the current two-year cycle on Sept. 30, 2014.
  - Reduce by half the DAWIA certification delinquency rate of 8.1 percent.
  - Improve by half the Army acquisition "no-show" and class failure rate for Defense Acquisition University courses.

By focusing on these goals, we will continue to develop our people as a professional workforce for FY13 and beyond.

People are the heart of Army acquisition. (See Figure 1.) Securing a top-notch acquisition team built on a foundation of the right skills at the right place and at the right time ensures that we remain successful and are prepared for acquisition challenges. The more attuned we are to our workforce capabilities and to sustaining and retaining those critical skills and personnel, the more we can adapt to the current challenges of austere resources.

To win the war for talent, HCSP pushes us to constantly analyze Army acquisition workforce trends, challenges and initiatives; the goal is to guarantee that the AAC is considering the entire personnel lifecycle of our workforce, from accession to transition. This analysis allows us to understand the incentive, retention, recruitment and career development programs we must have in place to secure and sustain a world-class acquisition team.

EDUCATION AND TRAINING

To maintain a competitive edge for our civilian and military workforce in the larger acquisition community, the AAC has in place programs, tools and stringent education requirements. Our business savvy is captured in the requirement of 24 business hours for AAC membership, along with a Level II DAWIA certification in one of the 14 acquisition career fields.

PEOPLE ARE THE HEART OF ARMY ACQUISITION. SECURING A TOP-NOTCH ACQUISITION TEAM BUILT ON A FOUNDATION OF THE RIGHT SKILLS AT THE RIGHT PLACE AND AT THE RIGHT TIME ENSURES THAT WE REMAIN SUCCESSFUL AND ARE PREPARED FOR ACQUISITION CHALLENGES.

Eighty-two percent of our acquisition workforce has bachelor's or higher degrees. With our Acquisition Tuition Assistance and Degree Completion programs, we can ensure that our personnel are striving for education excellence as well as meeting DAWIA statutory requirements.

The AAC offers exciting developmental programs such as Training with Industry; Competitive Development Group/ Army Acquisition Fellowship; and the Senior Executive Service College Fellowship. We have an Acquisition Leadership Challenge Program modeled on Air Force best practices, and acquisition boot camps for new hires to instill in them an esprit de corps for the Army and the acquisition profession.

Our DAWIA certification and rates are equal to or, in many cases, better than industry standards. To date, the Army acquisition workforce rate of being certified or within the allowable grace period is 92.5 percent, the highest ever.

Army acquisition has invested in advanced tools to increase our efficiency and to support a highly trained, agile and adaptive workforce. Our Career Acquisition Management Portal (**https://rda.altess.army.mil/camp/**) houses our Career Acquisition Personnel and Position Management Information System (CAPPMIS), which serves as our acquisition workforce repository of information.

Several years back, we instituted an online Certification Management System, allowing workforce members to apply for DAWIA certification online with ease. Our automated Individual Development Plan (IDP) provides a five-year road map with which acquisition employees can work with their supervisors on acquisition career development, including DAWIA certification training.

By law, members of our acquisition workforce must obtain 80 CLPs in their acquisition field of study within a two-year cycle. CLPs keep our acquisition workforce relevant and proficient, with the right skills and capabilities. At the end of the most recent two-year cycle on Sept. 30, 2012, 97 percent of our acquisition workforce had achieved the required 80 CLPs.

ACQUISITION WORKFORCE INITIATIVE

Under Section 852 of the 2008 National Defense Authorization Act, which governs use of the DAWDF, Army acquisition continues to recruit and hire, develop and train, and recognize and retain a superior workforce. By FY15, the Army target for new acquisition hires is 1,885. To date, the Army has hired 1,730 new acquisition professionals.

We must protect our investment, and many initiatives are in place as a result of Section 852 that focus on strengthening our acquisition team. We will continue to capture lessons learned.

CONCLUSION

This brings us back to the heart of the AAC—people. We are on track to maintain a high-quality, high-performing, agile and adaptive professional team of acquisition experts with the right skills and capabilities now and into the future. Our BBP 2.0 focus on strengthening the acquisition workforce is inherent in our HCSP, our programs, the tools we have implemented and the initiatives we have instituted.

We will continue to capture lessons learned and conduct analyses of workforce trends to secure and sustain a world-class acquisition team now. For more information on USAASC BBP 2.0 and workforce analysis efforts, please contact Joan Sable at **joan.l.sable.civ@mail.mil** or Robert Spencer at **robert.a.spencer16.civ@mail.mil**.

EDUCATION and TRAINING UPDATE

EDUCATION AND TRAINING OPPORTUNITIES

The Office of the Army Director of Acquisition Career Management (DACM), along with the rest of the Army, recently has received significant funding cuts. However, our top priority remains ensuring that our civilian and military workforce has multiple opportunities to meet statutory certification and development requirements. We will continue to fund those already enrolled in any of our tuition assistance, leadership development or experiential programs. In addition, we are working daily to ensure that future opportunities remain viable. That said, we have had to suspend some programs such as the School of Choice, for which we originally planned an announcement opening in mid-FY13. There will ***not*** *be a School of Choice announcement this year.*

The **Naval Postgraduate School Master of Science in Program Management** announcement is open until May 13 to all eligible personnel in grades GS-11 to 15 or broadband/pay band equivalent positions who have met their current position certification requirements. While it is not in beautiful Monterey, CA, this distance learning program provides the required Defense Acquisition University (DAU) training in program management as well as other career field courses, culminating in a master's degree. For more information, go to **http://asc.army.mil/web/career-development/programs/naval-postgraduate-school-master-of-science-in-program-management/.**

The **Excellence in Government Fellowship (EIGF)** announcement will be open from June 13 through July 15 for all eligible personnel in grades GS-13 through GS-15s or broadband/pay band equivalent positions who have met their current position certification requirements. EIGF offers senior acquisition workforce members the opportunity to network and team with fellow senior leaders from across the government. This program allows them to focus on benchmarking best practices, which they can then implement upon returning to their organizations. For more information, go to **http://asc.army.mil/web/career-development/programs/excellence-in-government-fellows-program/.**

The Army DACM Office recently published our first **Army Acquisition Civilian Leadership Development Plan**. Unfortunately, there is not one clear path for civilians. That would be too easy! Unlike the military, civilians can take hundreds of different routes in their quest for upward mobility. This plan is meant as a guide for all levels of the acquisition workforce. Using this model, all workforce members can see what the training requirements are at each level. In addition, they can use this plan to identify desired training opportunities available at upper levels. Each opportunity links to an information page for the program. Please take time to review programs of interest and put them on your Individual Development Plan to discuss with your supervisor.

The model is broken into four sections. (See Figure 1 on Page 142.) From bottom to top, they are:

- **Defense Acquisition Workforce Improvement Act (DAWIA)/DAU training**—functional *required* training, from Level I through 400-level courses.
- **Army Civilian Education System (CES) courses**—Army

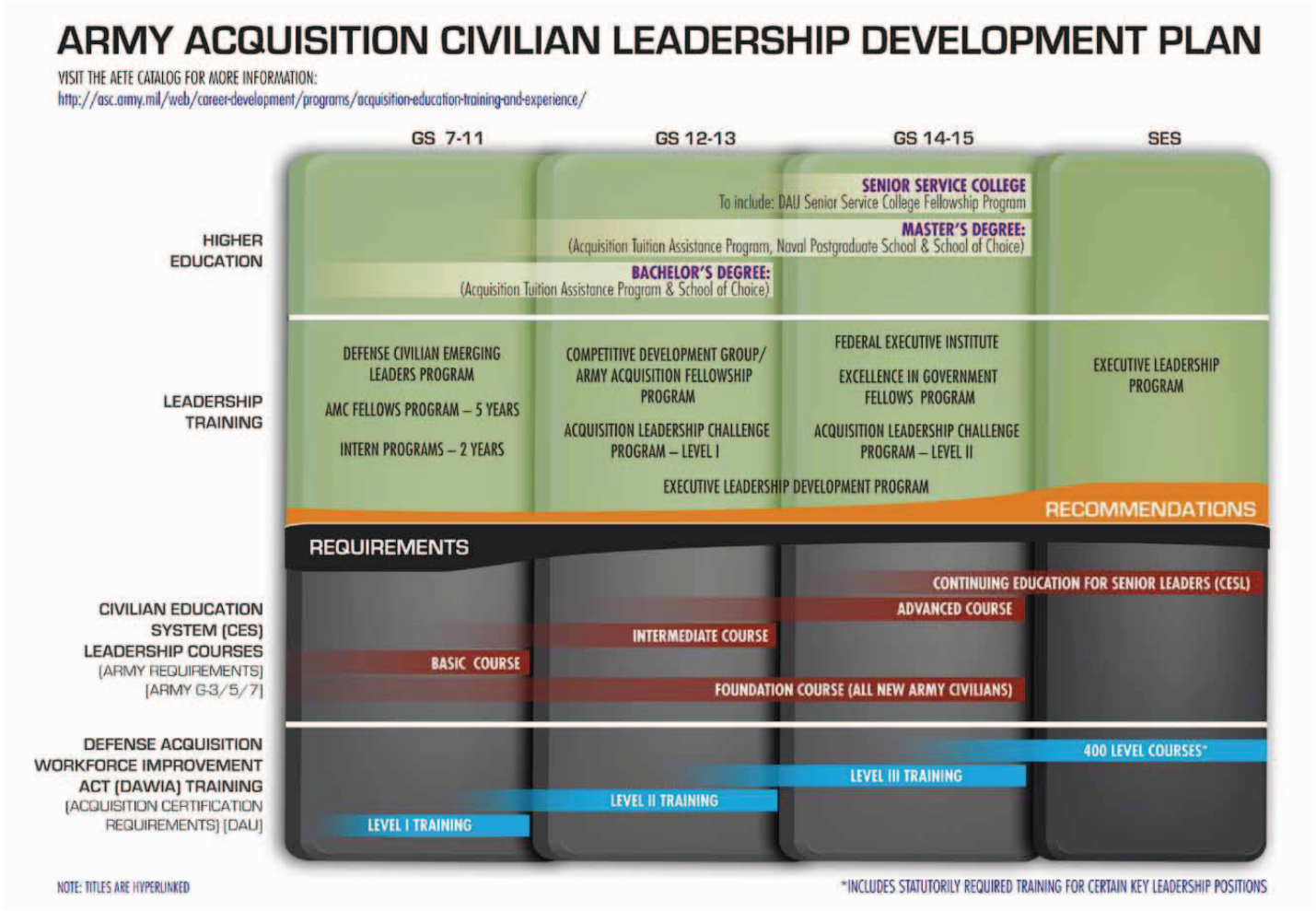
G-3/5/7 *required* courses, from the Foundation Course through Continuing Education for Senior Leaders, depending on rank.

- **Leadership Training**—includes all the leadership opportunities available in our acquisition, education, training and experience (AETE) portfolio, as well as a few DOD and U.S. Army Materiel Command programs.
- **Higher Education**—bachelor's, master's, and higher degrees, as well as Senior Service College (SSC) and SSC fellowships.

To view the full plan and download a copy, go to **http://asc.army.mil/career-development/civilian/career-planning-steps/.**

The **Acquisition Leadership Challenge Program (ALCP)** is the newest program in the Army AETE portfolio. Based upon the huge success our sister service the Air Force has had with ALCP, we piloted multiple offerings of the 2½-day course in FY12. For FY13, we are bringing the course to you. For more information on how to apply, go to **http://asc.army.mil/web/career-development/programs/acquisition-leadership-challenge-program/.** At right are the remaining FY13 ALCP training dates, by location.

FIGURE 1



The Army Acquisition Civilian Leadership Development Plan is a guide to career advancement through the hundreds of different possible routes. (SOURCE: USAASC)

FY13 Plan

DATE	OFFERING TYPE (ALCP I or II)	LOCATION
April 29 – May 3	Back-to-back Level I offerings	Aberdeen, MD
May 20-24	Level I & Level II	Atlanta, GA
June 10-14	Back-to-back Level I offerings	Warren, MI
July 29 – Aug. 2	Back-to-back Level I offerings	Huntsville, AL
Aug. 19-23	Level I & Level II	Atlanta, GA

DAU HIGHLIGHTS

The training required for Army Acquisition Workforce members is a mission-critical activity and is exempt from recent cuts outlined in a memorandum from the Deputy Secretary of Defense Dr. Ashton Carter, dated Jan. 10, 2013. DAU travel for certification courses required under DAWIA is centrally funded by DAU through the U.S. Army Acquisition Support Center (USAASC). Some organizations are canceling acquisition workforce members' travel for DAU certification training as part of their efforts to address budgetary guidance.

The Jan. 10 memo outlines that DAU central funds are entirely separate from actions taken within a service or agency to mitigate budgetary constraints in FY13. Army Acquisition students approved to use DAU central funds to attend training need not cancel it because of the budget situation.

Cancellation requests from students who have approval for central travel funds will be denied if they are made fewer than 30 days from the class start or reservation cutoff date on the basis of funding constraints. Students will be deemed "no-shows" if they do not attend the scheduled training. USAASC will continue to centrally fund training at cost-effective locations selected by the student. Commands and supervisors should continue to support sending their employees to required DAWIA training. To view Acting DAU President Dr. James S. McMichael's Jan. 29 memo, "Status of Travel Funding for the Defense Acquisition University (DAU) Training in FY2013," go to **http://asc.army.mil/web/wp-content/uploads/2013/01/DAU-Travel-Status-Memo-2013.pdf.**

DAU course management has a new process to allow higher-priority, specifically Priority 1, students their first preference in DAU resident courses. As a result, students in Priorities 2 through 5 will be wait-listed for classes showing available seats. Students who are placed in a wait status can convert to a class reservation if a seat is available 65 days before the class start date. They may still be bumped, up to five business days before the class start date, if a higher-priority student applies within the 65-day period. The new process is designed to minimize bumping and allows Priority 1 students to see which courses actually have seats available for them to obtain their required position certifications.

A reminder: Applications for training cannot be processed by the Army registrar's office until the student's supervisor has approved the training. It is also imperative that students' and supervisors' email addresses are correct on the Army Training Requirements and Resources Internet Training Application System (AITAS) student profile. Students should apply through AITAS at **https://www.atrrs.army.mil/channels/aitas**. For more information on DAU training, including systematic instructions, training priority descriptions, and frequently asked questions, go to **http://asc.army.mil/web/career-development/programs/defense-acquisition-university-training/**.

Students who have received a confirmed reservation in the requested class must ensure that they attend the class as scheduled. Cancellation requests for a confirmed reservation must be submitted at least 30 calendar days before the class starts or by the reservation cutoff date, whichever is earlier, to avoid a no-show.

The Army DACM office is in the second iteration of the FY14 DAU schedule build. At this stage, we are reviewing the FY14 draft schedule and validating

Army on-site submissions. On May 16, the FY14 schedule will be available for students to apply for classes. If students are unable to attend an FY13 course, they need to review and complete the required course prerequisite(s) now for a course they intend to take in the future.

Students should continue to apply for FY13 courses available on the schedule. Planning and applying early will afford students a better chance of obtaining a class in the timeframe requested. Students should encourage their supervisors to approve training requests as soon as they apply. The DAU iCatalog at **http://icatalog.dau.mil** contains details on the prerequisites that students must meet before applying to a DAU course. A low-fill list posted weekly at **http://icatalog.dau.mil/onlinecatalog/tabnav.aspx** allows students an opportunity to attend classes coming up in the next 60 days. Low-fill classes are available on a first-come, first-served basis within 60 days before the start date.

DAU provides a listing of equivalencies at **http://icatalog.dau.mil/appg.aspx** for all courses it delivers and/or predecessor courses, which are considered acceptable toward meeting current acquisition career field certification requirements. To document equivalencies accepted by DAU from other institutions, open a help desk ticket at **https://rda.altess.army.mil/camp/index.cfm?fuseaction=support.helpRequest** and request that your Acquisition Career Record Brief be updated to reflect completed DAU equivalent course(s).

DAU is developing a new four-day course, Understanding Industry (Business Acumen) (ACQ 315). The course covers a broad spectrum of business knowledge competencies including industry orientation, organization, cost and financial planning, business strategy and development, supplier management, incentives and negotiating strategies. Students will learn business skills related to aligning company strategies, finances and operations to motivate company decisions, gain fair and reasonable profits, and provide taxpayers the best value for defense products purchased by the government. The course is presented from an industry perspective. The target audience is DAWIA Level III-certified acquisition personnel across all career fields. DAU will pilot the course June 24-28 in Huntsville, AL. The pilot offering will be open to all services on a first-come, first-served basis.

ON THE MOVE

WEBSTER MOVES TO OSD

Keith B. Webster, former deputy assistant secretary of the Army for defense exports and cooperation (DASA(DE&C)), has taken on a new role as director of international cooperation in the Office of the Secretary of Defense (OSD). Webster manages a host of key issues for **Frank Kendall**, the undersecretary of defense for acquisition, technology and logistics (USD(AT&L)), including international partnerships with key global allies, significant acquisition- and technology-related matters affecting U.S. global military development, and coordination with OSD policy personnel.

"Inside Mr. Kendall's portfolio of AT&L and inside the broader context of OSD, we will decide our priority activities and examine how we should be organized and engaged globally," said Webster, whose new role draws upon his considerable expertise in technology- and acquisition-specific international cooperation issues, foreign military sales (FMS), direct commercial sales and international policy issues.

Webster managed the Army's security cooperation programs as the DASA(DE&C) since January 2007. In that capacity, he was the deputy for international acquisition to the assistant secretary of the Army for acquisition, logistics and technology (ASA(ALT)). This involved generating policy and conducting oversight of Army security assistance, foreign and commercial sales, and international armaments cooperation. Webster supervised more than $18 billion in annual sales, managed programs that involved more than 2,000 Army civilian and military personnel, and worked to identify critical capabilities that need to be sustained.

Among the FMS cases that Webster oversaw, many of which helped to solidify important relationships with international coalition members, were sales of CH-47 Chinook cargo helicopters, AH-64 Apache attack helicopters, Patriot missiles, Excalibur 155 mm precision

A NEW ROLE

Keith B. Webster (center right), former DASA(DE&C), receives accolades from the Honorable Heidi Shyu, ASA(ALT); LTG William N. Phillips, principal military deputy to the ASA(ALT) and director of acquisition career management; and Gabriel Camarillo, principal deputy to the ASA(ALT). (Photo courtesy of ASA(ALT))

artillery shells, and Guided Multiple Launch Rocket Systems. In recognition of these efforts, Webster was awarded the rank of Chevalier (knight) in the French Order National du Mérite in June 2012. More recently, he received the Swedish Defense Materiel Administration's Medal of Merit (Silver) in January.

Before becoming the DASA(DE&C), Webster was director of business operations for the Defense Security Cooperation Agency. Webster has an M.A. in international relations from Catholic University and a B.S. in business/finance from Towson State University. He is Level III certified as an acquisition professional and is a fellow of the Center for International Studies, Massachusetts Institute of Technology.

Wimpy Pybus is currently serving as the acting DASA (DE&C).

MILLER NAMED DASA (R&T)

The secretary of the Army approved the reassignment of Mary J. Miller, formerly deputy program executive officer (DPEO) for Soldier, Fort Belvoir, VA, to the position of deputy assistant secretary for research and technology (DASA(R&T)) and chief scientist, ASA(ALT), effective Feb. 10. Miller was serving as the acting DASA(R&T).

A member of the Senior Executive Service (SES) since August 2005, Miller was named DPEO Soldier in December 2010. Previously she served as director for technology within the Office of the ASA(ALT), responsible for the oversight and coordination of Army science and technology efforts that lead to transition of technology in support of Army acquisition programs.

Miller holds a B.S. in electrical engineering from the University of Washington, an M.S. in electrical engineering/electrophysics from the George Washington University and an M.B.A. from the University of Tennessee.

DENVER LEAVES DASA(P) JOB

Kim Denver, who was appointed the DASA for procurement (DASA(P)) in June 2011, departed the position effective March 22, having accepted a position in private industry. Denver managed the Army's procurement mission, including developing and disseminating policies, processes and contracting business systems. He directed the evaluation, measurement and continuous improvement for more than 270 Army contracting offices worldwide, executing contracts for major weapon systems, base logistics support and wartime operational contracting in Iraq and Afghanistan. Denver also served as functional career representative for contracting and supported the multinational forces, through the U.S. Central Command, in combat operations, humanitarian relief, and the reconstruction and security of Iraq and Afghanistan. **BG Joseph L. Bass**, the Army's director for contracting, has assumed additional responsibility as the acting DASA-P.

DPEO C3T RETIRES

William Sverapa, DPEO for command, control and communications – tactical, (C3T), retired in January after 33 years of service to the Army, the past four of them as DPEO C3T, with a ceremony Jan. 23 at Aberdeen Proving Ground, MD.

Sverapa, an SES member since 2009, began his government career in 1979 as a mechanical engineer at Picatinny Arsenal, NJ. In 1989 he started work with the command, control, communications, computers, intelligence, surveillance and reconnaissance community as a systems engineer for PEO C3T's then-project manager for mobile subscriber equipment. Much of his work at PEO C3T centered on developing the Army's tactical network backbone, now known as Warfighter Information Network – Tactical (WIN-T). In 2012, Sverapa was awarded the DOD Distinguished Civilian Service Award, the highest honor given by the secretary of defense to a DOD career civilian.

"His work ethic sets an example and sets the tone for the rest of our organization," said **MG N. Lee S. Price**, PEO C3T. "He is a leader who leaves his door open to the workforce. … His ability to bring stakeholders together was critical."

"The tactical network is the Army's number one modernization priority and the WIN-T program provides that network," said Sverapa. "What could make you more proud than that?" Sverapa said he will miss most the people he worked with, each of whom had something to contribute and something to teach. "The level of commitment is inspiring," he said.

OVER AND OUT

William Sverapa, SES, retired in January after 33 years of service to the Army, culminating in his assignment as DPEO C3T. (U.S. Army photo)

Mark A. Compton, director of the Joint Tactical Networking Center , is currently serving as acting DPEO C3T.

GENERAL OFFICER PROMOTIONS, ASSIGNMENTS

President Barack Obama nominated **BG John F. Wharton**, commanding general, U.S. Army Sustainment Command, Rock Island, IL, for promotion to the rank of major general.

GEN Raymond T. Odierno, chief of staff of the Army, announced the following assignments:

BG Stephen B. Leisenring, commander, Joint Theater Support Contracting Command, CENTCOM, Operation Enduring Freedom (OEF), to deputy chief of contracting management, U.S. Army Corps of Engineers (USACE), Washington, D.C.

BG James E. Simpson, deputy chief of contracting management, USACE, Washington, DC, to commander, Joint Theater Support Contracting Command, CENTCOM, OEF.

BG Cedric T. Wins, deputy commander, police, NATO Training Mission – Afghanistan/Combined Security Transition Command – Afghanistan, to director, Requirements Integration Directorate, Army Capabilities Integration Center, U.S. Army Training and Doctrine Command, Joint Base Langley-Eustis, VA.

PEO MISSILES AND SPACE MARKS CHANGE OF LEADERS

The PEO Missiles and Space community celebrated the promotion and assignment of its new leader, **BG L. Neil Thurgood**, on Feb. 26 with a promotion ceremony and change of charter at Redstone Arsenal, AL.

The Senate approved Thurgood's promotion to brigadier general on Jan. 1. During the ceremony at Redstone, he received his first star in the presence of his father, LTC Leon Thurgood (U.S. Army, Ret) and his brother, MG Keith L. Thurgood (U.S. Army Reserve, Ret). The **Honorable Heidi Shyu**, the Army Acquisition Executive and ASA(ALT), officiated at the promotion ceremony and change of charter.

Such ceremonies are important, she said, to recognize that the new leader "must become more than he was yesterday. Through ceremony, he is set apart and becomes a new leader. Through ceremony, we recognize those who have come before and we must build on the legacy of their achievements," the Redstone Rocket quoted Shyu as saying.

Thurgood had been DPEO Missiles and Space. **Barry J. Pike**, SES, who was serving as acting PEO, has returned to the position of DPEO.

Thurgood thanked the "mentors who have taken the time to teach and coach me through the years … who gave a young man lots of opportunities to be successful and opened a lot of doors." Growing up in the Army, his parents provided their family "with different views of the world we traveled around," said Thurgood, who honored Vietnam's prisoners of war and the nation's veterans, whose "selfless service have created a great legacy and shown us there is more to life, a greater purpose" and that "each task is important."

Looking ahead, Thurgood said, "The accomplishments of the past will be challenged by the resource-constricted environment of our future. As Winston Churchill said, 'We have run out of money; now we have to think.' I have no doubt you are up to the challenge."

LEGION OF MERIT

CW5 Jack Tartaglia is presented the Legion of Merit award by MG William "Tim" Crosby, PEO for aviation, during Tartaglia's retirement luncheon Jan. 16 in Huntsville, AL. (U.S. Army photo by Sofia Bledsoe)

PEO AVIATION CHIEF AWARDED LEGION OF MERIT

CW5 Jack Tartaglia was presented the Legion of Merit award by MG William "Tim" Crosby, PEO for aviation, during a luncheon Jan. 16 in Huntsville, AL, marking Tartaglia's retirement after 33 years of military service. Tartaglia began his military career in the U.S. Air Force in 1970 as a C-130 crew chief and mechanic and entered the Army in 1991, completing initial entry rotary wing qualification. His career culminated in his assignment to the Cargo Helicopters Project Management Office.

In the course of his career, Tartaglia served as a tech supply officer, test pilot, production control officer, maintenance test flight evaluator, and evaluation and standardization officer, and accumulated 4,000 flight hours. Crosby, who first met Tartaglia when he was a WO1, said, "Always look back at that uniform and remember that you made a big difference for your country."

The Legion of Merit recognizes exceptionally meritorious conduct in the performance of outstanding services and achievements.

SECRETARY OF THE ARMY AWARDS SPOTLIGHT EXCELLENCE IN CONTRACTING

by Mr. Robert E. Coultas

ACCOLADES FOR ACC – WARREN

Henry Hallock accepts an Outstanding Unit Team Award on behalf of U.S. Army Contracting Command – Warren from the Honorable Heidi Shyu. At left is Kim Denver, then-deputy assistant secretary of the Army for procurement. Hallock accepted the Outstanding Unit/Team Award: Systems, R&D, Logistics Support (Sustainment) Contracting on behalf of the FY13-15 Stryker Life Cycle Requirements Contract Team supporting the Project Management Office (PMO) Stryker Brigade Combat Team within Program Executive Office Ground Combat Systems, Warren, MI. (Photos courtesy of the U.S. Army Acquisition Support Center)

Eleven individuals and teams within the Army contracting community were recognized for their exceptional skill, efficiency and dedication in service to Soldiers, the Army and the nation, with the 2012 Secretary of the Army Awards for Excellence in Contracting, presented during a ceremony Jan. 28 in El Paso, TX.

"This year, we had over 70 nominations from around the world, from Hawaii to Warren, MI, to Africa and the Middle East," said Master of Ceremonies Ed Martin, director of workforce development in the Office of the Deputy Assistant Secretary of the Army for Procurement. "The depth and breadth of the nominations were truly outstanding, showcasing the best and brightest in the contracting community."

The Army's most senior leaders in the acquisition and contracting communities attended the ceremony to recognize the award recipients. The ceremony was held in conjunction with the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)) Principal Assistant Responsible for Contracting Workshop.

"You are the link between the requirements for our men and women in uniform and the vendors who fulfill these requirements," said the Honorable Heidi Shyu, ASA(ALT). "Whether providing contracting support for the successful drawdown in Iraq and now in Afghanistan, purchasing weapon systems and equipment, providing health care and medical facilities for our wounded warriors, optimizing intelligence capabilities, or dredging our nation's harbors and channels, Army contracting personnel make it happen."

AWARD WINNERS

A total of 72 nominees competed for seven individual awards and four unit or team awards. Following are the award categories and recipients:

- **Barbara C. Heald Award—Ginger L. Gruber**, Afghanistan Engineer District – North in the U.S. Army Corps of Engineers (USACE) National Contracting Organization (NCO). Gruber was honored for making a significant impact on the individuals who served under her leadership, as well as for the impact of her decisions and actions on

HONORING EXCELLENCE

The Honorable Heidi Shyu, ASA(ALT), addresses attendees at a Jan. 28 ceremony in El Paso, TX, honoring the winners of the 2012 Secretary of the Army Awards for Excellence in Contracting.

the security and stability of Afghanistan. The award is given in memory of Heald, who was killed in January 2005 by a rocket attack on the U.S. Embassy in Baghdad, during her third tour of duty in Iraq as a contracting official.

- **AbilityOne Program Award—Deborah A. Ault**, U.S. Army Mission and Installation Contracting Command (MICC) – Fort Knox, KY, an element of U.S. Army Contracting Command (ACC) under U.S. Army Materiel Command (AMC). Ault was recognized by NISH (the National Industries for the Severely Handicapped) and MICC managers, contracting officers and contract specialists as an advocate for the AbilityOne Program.

- An outgrowth of the Javits-Wagner-O'Day Act, AbilityOne is a federal initiative to encourage private and public organizations to generate employment opportunities for Americans who are blind or have other significant disabilities. NISH is a national nonprofit agency that creates employment opportunities for people with significant disabilities through a network of more than 550 nonprofit partners who fill contracting needs for the federal government, commercial businesses and government contractors.

- **Outstanding Contracting Specialist/Procurement Analyst Award—Jeffrey D. Claar**, Program Executive Office Simulation, Training and Instrumentation Acquisition Center, Orlando, FL. Claar was recognized for exemplary performance in successfully executing more than $2.9 billion in contracts related to simulation, training and instrumentation testing capabilities.

- **Outstanding Contracting Officer: Contingency Contracting—LTC Douglas S. Lowrey**, senior contracting officer – Iraq in the Regional Contracting Center, Iraq of U.S. Central Command's Joint Theater Support Contracting Command. Lowrey's noteworthy performance and professional skill ensured a safe and efficient drawdown of all Senior Contracting Office – Iraq forces, more than 64,000 contractor personnel and 500,000 pieces of equipment. He established the contracting cell for the Office of Security Cooperation – Iraq in the U.S. Embassy while orchestrating the transition of security contracts, valued at more than $1 billion and representing 10,000 contractor personnel, from U.S. Forces – Iraq to Chief of Mission – Iraq.

- **Outstanding Contracting Officer: Systems, R&D, Logistics Support (Sustainment) Contracting—James M. Owens**, ACC – Redstone, AL. Owens was honored for excellent performance as the Black Hawk U-60M multiyear, multiple-service contracting officer and team leader. He established evaluation and negotiation processes that made the team leaner, faster and more adaptable, amid an extensive volume of data reviewed and evaluated in support of U.S. Army Aviation and Missile Command.

- **Outstanding Contracting Officer: Installation Level – Directorate of Contracting—Sandra E. Kim**, Regional Contracting Office (RCO) – Hawaii, Schofield Barracks, under the 413th Contracting Support Brigade of ACC's U.S. Army Expeditionary Contracting Command. Kim was recognized for contributing directly to nation building and validating operational contracting support through her extensive training of contingency contracting officers. She provided reachback support for multiple exercises and operations. Her ability to integrate people, systems and customers enabled innovation and improved planning that led to significant process improvements and mission completion.

- **Outstanding Contracting Officer: Specialized Services & Construction Contracting—Tonju L. Butler**, USACE

INDIVIDUALS, TEAMS HONORED

LTC Douglas S. Lowrey (left), Regional Contracting Center, Iraq; Sandra E. Kim, RCO – Hawaii; and COL Martin A. Zybura, also of RCO – Hawaii, received individual and team awards for contingency and installation-level contracting.

NCO's Engineering and Support Center, Huntsville, AL. Butler was commended for her performance in supporting the Huntsville center's mission. She distinguished herself as an adept business advisor, able to balance a vast knowledge of the regulatory environment while maintaining a firm grasp on the functional nuances of contracting.

- **Outstanding Unit/Team Award: Contingency Contracting—Ordnance & Explosives International Contracting Team**, USACE NCO's Engineering and Support Center, Huntsville, AL. This team was recognized for its consistent delivery, superior professionalism and a commitment to excellence that benefited the warfighter directly and served as a force multiplier throughout the theater of operations. The team consistently satisfied the mission and exceeded all expectations.

- **Outstanding Unit/Team Award: Systems, R&D, Logistics Support (Sustainment) Contracting—FY13-15 Stryker Life Cycle Requirements Contract Team**, ACC – Warren, MI. The team contributed greatly to the mission of the Project Management Office (PMO) Stryker Brigade Combat Team within Program Executive Office Ground Combat Systems by leading the associated acquisition planning and pre-solicitation efforts. The team developed, managed and led a highly complex contracting project that required the involvement of nearly all of the functional resources within the PMO. The team demonstrated exceptional skills in leadership, project management and contracting throughout the execution of the project.

- **Outstanding Unit/Team Award: Installation Level – Directorate of Contracting—RCO – Hawaii**. The RCO team was recognized for outstanding mission accomplishments through demonstrated customer support. RCO – Hawaii has earned a reputation for focusing on its people and customers to improve the overall support to the Pacific warfighter and the taxpayer. The team's unique ability to incorporate people, systems and customers enabled innovation and improved planning, which led directly to significant process improvements and mission success.

- **Outstanding Unit/Team Award: Specialized Services & Construction Contracting—Omaha Systems Restoration Team**, USACE NCO's Omaha District, NE. The team was recognized for remarkable performance in responding to the 2011 flooding on the Missouri River, considered to be the worst flood ever recorded on that waterway. The Omaha Systems Restoration Team employed every acquisition tool available and created new tools when necessary to ensure timely repairs to the flood reduction system that protects one-quarter of the continental United States. The team partnered with other USACE districts and with industry to effectively and efficiently contract for repairs under budget and in expedited time frames.

"In the last year, it has been my privilege to visit our theater of operations and to hear firsthand about the great things our contracting professionals do, day in and day out without fanfare," Shyu said. "It is my hope that that you will continue to set a high standard for contracting, not only within the Department of Defense but throughout the federal government."

MR. ROBERT E. COULTAS is the Army AL&T magazine departments editor and an Access AL&T news service editor. He is a retired Army broadcaster with more than 40 years of combined experience in public affairs, journalism, broadcasting and advertising. Coultas has won numerous Army Keith L. Ware Public Affairs Awards and is a DOD Thomas Jefferson Award recipient.

SPOTLIGHT

MS. CHERYL MAGGIO

by Mr. Robert E. Coultas

It's been a busy and rewarding career for Cheryl Maggio so far. "This is one of those jobs where I can look myself in the mirror every day and say, I did something good," said Maggio, a DA civilian who has been helping make the country a little safer every day in her 25 years with the U.S. Army Chemical Materials Agency (CMA).

Maggio's work focuses on the safe and compliant destruction of the U.S. chemical weapons stockpile of mustard and nerve agents stored in bulk containers, mines, bombs, projectiles and rockets, and the closing of storage facilities throughout CONUS and at Johnston Atoll in the Pacific Ocean. In her tenure with the agency, she has moved from senior chemical engineer to deputy of operations to director of chemical demilitarization. Maggio now serves as deputy project manager for chemical stockpile elimination (PM CSE) at Aberdeen Proving Ground, MD.

EMBRACING THE MISSION

After earning her B.S. in chemical engineering from Villanova University in 1981, Maggio left her native Baltimore and headed to the Bluegrass State, where she took a position as a monomer process supervisor and development engineer at a medium-size chemical plant.

"I was living and working in Western Kentucky, and I wanted to come closer to home. I saw an advertisement for a job sponsored by the program manager for chemical demilitarization located at Aberdeen Proving Ground." For Maggio, the position proved too good to pass up. "They offered me a program where I would have a congressional mandate to destroy a class of weapon of mass destruction … while maximizing safety and protecting the environment. I mean—what a great opportunity!"

Early in her Army career, Maggio found that her biggest challenges were the social and political aspects of her position. "I thought I had a wonderful mission," Maggio said. "What possibly could go wrong?" The answer: The public didn't always share her perspective.

"Being an engineer, I had a lot of confidence and understanding of the benefits of incinerating the stockpile. Unfortunately, there was a strong public backlash toward incineration." Maggio said opponents argued that the agent would simply go "up the stack," which was incorrect. By contrast, many communities were comfortable with the storage of the weapons, which had been in place near them for decades.

"We were telling the truth, but people were saying, 'We don't believe you—you're from the Army!' We were shocked." Maggio maintained an engineer's faith in the facts, numbers and drawings. "I believed that if the facts were presented, everyone would join together. I didn't understand how facts could be misinterpreted."

Maggio overcame the challenge by incorporating public concerns into the project, opening outreach offices in the small towns near each demilitarization site and ensuring that technical information was available on the agents, munitions, destruction technologies, test results, permits, public comments, schedules and costs.

"We also provided tours of the facilities [and] attended almost every public

MAKING IT HAPPEN

Cheryl Maggio, deputy PM CSE, and PM CSE Business Manager Om Handa inspect face masks used in the protective suit known as a Demilitarization Protective Ensemble. Tending to such details is part of the satisfaction Maggio takes in her job: "I get to watch as a concept is developed, designed, constructed and systemized, and then I watch it come into being," she said. (CMA photo by Greg Mahall)

ACQUISITION EXCELLENCE

Cheryl Maggio (center left), deputy PM CSE, and her team were doubly honored at the Army Acquisition Excellence Awards ceremony Nov. 7, 2012: Maggio received the Director, Acquisition Career Management Award, and her PM CSE team was honored with the Transforming the Way We Do Business Award. (Photo by McArthur Newell, U.S. Army Acquisition Support Center)

meeting, answering any and all questions. We paid for independent technical experts to support communities in their evaluations of the program, supported citizen advisory committees, had independent oversight by the Centers for Disease Control and Prevention and the National Research Council, and in many states, we supported additional regulators to oversee our project."

Maggio said the knowledge she gained during that time gave her a clearer perspective on her chosen profession.

"These experiences have proven to be invaluable in forming my management style and improving my communication skills."

PEOPLE FIRST

Maggio and her 25 PM CSE team members share responsibility for the safe decontamination and destruction of the chemical agent disposal facilities, overseeing multibillion-dollar contracts, preparing the workforce for potential new missions and overseeing contractors in safely destroying the facilities.

So far, Maggio's team has destroyed nearly 90 percent of the U.S. stockpile of chemical warfare agent and munitions and five facilities on Johnston Atoll, Aberdeen, Newport, IN, and Pine Bluff, AR. But the job continues with the decontamination and/or closeout of sites at Anniston, AL, Umatilla, OR, and Tooele, UT.

When it comes to taking care of her award-winning team, Maggio says she's a big believer in training, continuous learning and career development. She sets a good example, having continued her education to earn a master's degree in management of technology from the University of Pennsylvania; in addition, she is Level III certified in program management and in systems planning, research, development and engineering (SPRDE) – systems engineering and Level II in SPRDE – program systems engineering. Maggio has also completed numerous professional development courses.

"Every member of my team—except for one, who's new to the group—is certified in his or her acquisition career field. They

are working on their second, third and sometimes fourth levels. I expect them to do their jobs and take advantage of [training] the Army offers in their acquisition specialty."

At the same time, Maggio expects her team to have a good work-life balance and encourages participation in group activities. "We have a lot of activities within our group to build camaraderie, ranging from simple potluck lunches to support for wounded warriors." Many members of Maggio's team and their families participate in the Tough Mudder program, which involves racing through mud, climbing 20-foot walls, crossing streams and the like, to raise money for the Wounded Warrior Project.

It was during an assignment at the Pentagon, as the director of chemical demilitarization from 2004 to 2007, when Maggio was inspired to get involved with the group. "When the wounded warriors from Walter Reed [National Military Medical Center] and other area hospitals would come for a tour of the Pentagon, everyone who worked there would line the hallways and cheer as they passed by. It was a very moving experience." She took those impressions to her current position, and the PM CSE team expressed interest in being part of a tour.

"So I called down [to the Pentagon] and it so happened that the assistant secretary of the army for acquisition, logistics and technology [ASA(ALT)] was sponsoring the next tour. We asked for permission to volunteer, it was granted, and we took a dozen people down. And it was a very, very special day."

JOB RECOGNITION AND SATISFACTION

Maggio's hard work and dedication were recognized last year at the annual Army Acquisition Excellence Awards ceremony, where she received the Director, Acquisition Career Management Award and the PM CSE team was honored with the Transforming the Way We Do Business Award. Maggio was doubly honored.

"It served as a capstone to a wonderful career in the demilitarization program," she said. "To be recognized by the ASA(ALT) community for successfully destroying the stockpiles, achieving safety records and saving the taxpayers over $3 billion was truly fulfilling."

Maggio described her fundamental mission as taking an idea and bringing it into reality.

"I get to watch as a concept is developed, designed, constructed and systemized, and then I watch it come into being. My team and I have had many struggles getting there, and there are and have been lots of challenges to overcome, but there's nothing better than the sense of accomplishment I get when we have turned an idea into something real."

MR. ROBERT E. COULTAS is the Army AL&T magazine departments editor and an Access AL&T News Service editor. He is a retired Army broadcaster with more than 40 years of combined experience in public affairs, journalism, broadcasting and advertising. Coultas has won numerous Army Keith L. Ware Public Affairs Awards and is a DOD Thomas Jefferson Award recipient.

25 YEARS OF SUPPORT
Cheryl Maggio has worked for CMA since January 1988, drawn by an interesting job posting and a desire to be closer to her hometown of Baltimore. The job was to fulfill a congressional mandate to destroy a class of weapons of mass destruction while maximizing safety and protecting the environment. (CMA photo by Greg Mahall)

CONGRESSIONAL UPDATE

'A PERFECT STORM'

On Feb. 26, in testimony before the U.S. House of Representatives Appropriations Subcommittee on Defense, Chief of Staff of the Army GEN Raymond T. Odierno painted a bleak picture of the fiscal landscape. Since then, the picture has improved slightly.

Odierno paid particular attention to the continuing resolution (CR) and the then-looming specter of sequestration, which subsequently went into effect. (The full text of his remarks for the record is online at **http://docs.house.gov/meetings/ap/ap02/20130226/100281/hhrg-113-ap02-wstate-odiernog-20130226.pdf.**)

Odierno called the current fiscal circumstances "dire and, to our knowledge, unprecedented." He described "the fundamental lack of predictability in the budget cycle," due not just to sequestration but also to DOD having "operated under a continuing resolution for 14 of the last 28 months." CRs create inefficiencies, he said, because they prohibit the start of new programs and increases for existing, needed programs, and restrict the movement of funds between programs as well as delaying program execution.

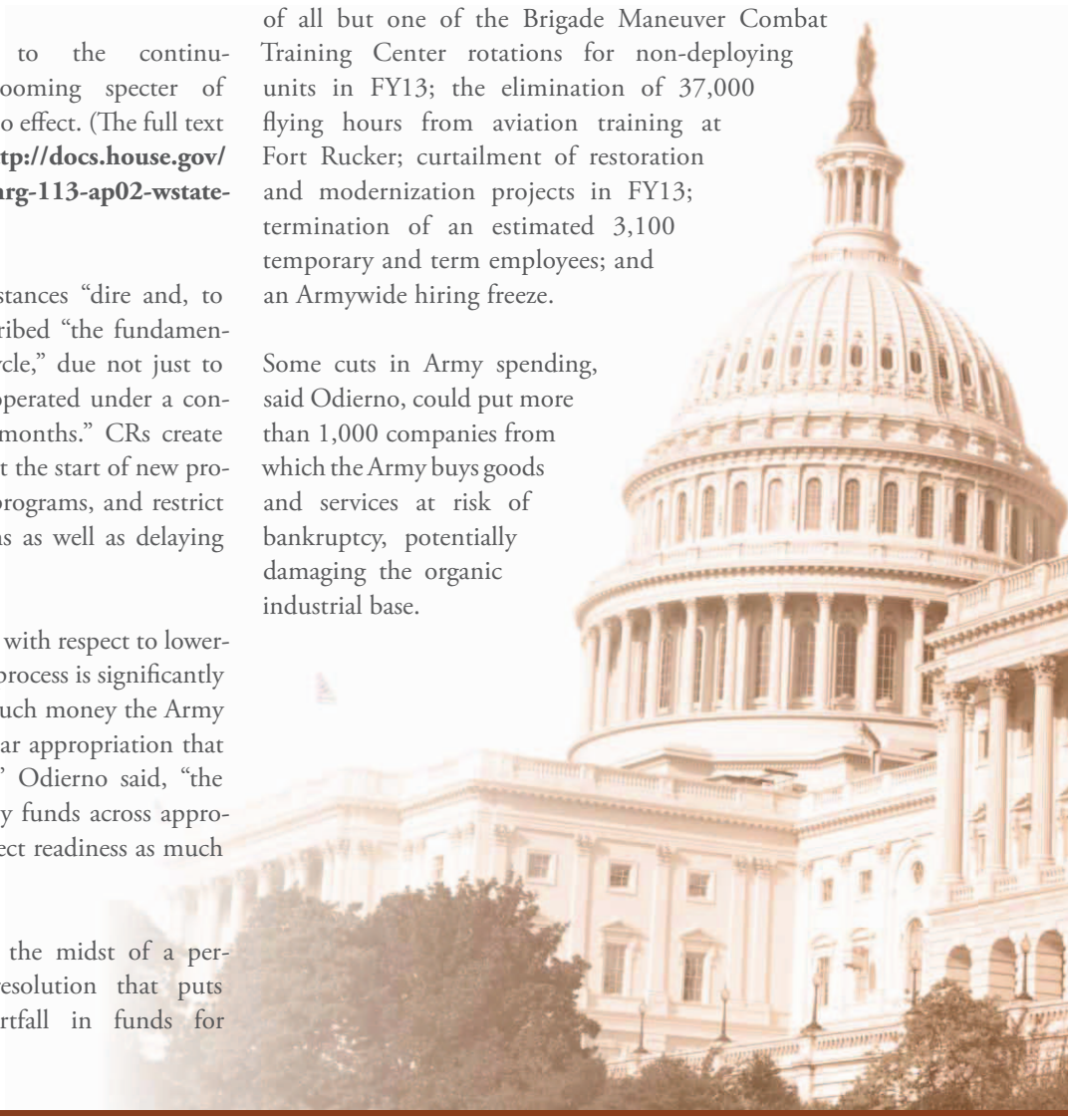
As the Army plans for the future, especially with respect to lowering the costs of acquisition, the budgeting process is significantly hampered by uncertainty as to just how much money the Army has to budget. "In the absence of a full-year appropriation that reallocates funds where they are needed," Odierno said, "the Army will need to reprogram the necessary funds across appropriations to address this shortfall and protect readiness as much as possible."

In short, he said, "we find ourselves in the midst of a perfect storm created by a continuing resolution that puts funding in the wrong places, a shortfall in funds for overseas contingency operations due to higher-than-anticipated costs in theater, and the threat of sequestration."

RISK MITIGATION

Odierno went on to describe pending cuts to training, personnel and maintenance, such as the cancellation of all but one of the Brigade Maneuver Combat Training Center rotations for non-deploying units in FY13; the elimination of 37,000 flying hours from aviation training at Fort Rucker; curtailment of restoration and modernization projects in FY13; termination of an estimated 3,100 temporary and term employees; and an Armywide hiring freeze.

Some cuts in Army spending, said Odierno, could put more than 1,000 companies from which the Army buys goods and services at risk of bankruptcy, potentially damaging the organic industrial base.



Part of the plan to make ends meet as a result of sequestration and the CR, Odierno said, is the one-day-a-week furlough of as many as 251,000 DOD civilians. That is likely to have broad effects on the Army's Acquisition Workforce and could affect acquisition programs both directly and indirectly. Reductions in training could also affect the workforce, delaying education that leads to certification or promotion.

SHARP REDUCTIONS

The Honorable Heidi Shyu, assistant secretary of the Army for acquisition, logistics and technology, and LTG James O. Barclay III, deputy chief of staff of the Army, G-8, expanded on Odierno's observations in joint testimony Feb. 28 before the House Armed Services Subcommittee on Tactical Air and Land Forces. (Their testimony is online at **http://docs.house.gov/meetings/AS/AS25/20130228/100324/HHRG-113-AS25-Wstate-ShyuH-20130228.pdf**.)

Sequestration, they said, "would cause sharp reductions in Soldier equipment investment. "Every single piece of Soldier equipment under development or production will be affected in the implementation of sequestration in some manner." They also cited the CR as a persistent problem.

Subsequently, on March 22, Congress sent H.R. 933, the "Consolidated and Further Continuing Appropriations Act, 2013," to the White House for President Obama's signature.

This new CR provides money for the rest of FY13, giving DOD more leeway in how to make the spending cuts mandated by sequestration. (For the full text of the final bill, go to **http://thomas.loc.gov/cgi-bin/query/D?c113:6:./temp/~c113ZjmXWx::**.)

UNPRECEDENTED CIRCUMSTANCES
Chief of Staff of the Army GEN Raymond T. Odierno testifies Feb. 12 before the Senate Armed Services Committee, in one of several visits to Capitol Hill to discuss the impacts of the continuing resolution and sequestration. (U.S. Army National Guard photo by SFC Jim Greenhill)

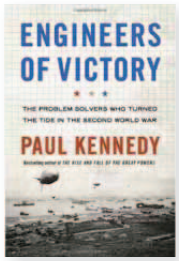
Reductions in procurement programs could affect several equipment programs, including:

- The Apache AH-64, for which reductions in planned FY13 production quantities could result in an increase in unit costs.
- Fewer OH-58 Kiowa Warrior replacement aircraft (329 on hand, of a required 368), exacerbating critical shortfalls in a fleet of aging aircraft that has the Army's highest operations tempo for combat aircraft.
- An anticipated price increase of 12 percent for the Javelin Missile, due to a reduction in the planned quantity of 400.

In addition, "Schedules for RDT&E [research, development, test and evaluation] programs are anticipated to see an extension in schedule ranging from six weeks to 18 months." That could affect programs such as the Future Vertical Lift (FVL) initiative to develop next-generation aircraft in light, medium, heavy and ultra categories, ultimately replacing the aging workhorses of the Army's rotary aircraft fleet.

RECOMMENDED READING LIST

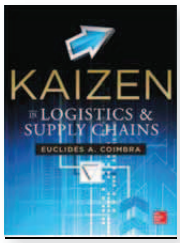
Army leaders have always encouraged their Soldiers to read. Even—and especially—in this age of information overload, the pursuit of knowledge through books is essential to develop a fuller understanding of acquisition, logistics and technology. In the words of GEN Raymond T. Odierno, chief of staff of the Army, "We can never spend too much time reading and thinking about the Army profession and its interaction with the world at large. … There is simply no better way to prepare for the future than a disciplined, focused commitment to a personal course of reading, study, thought, and reflection." On that note, we publish *Off the Shelf* as a regular feature to bring you recommended reading from Army AL&T professionals.



ENGINEERS OF VICTORY

by Paul Kennedy
(New York, NY: Random House, 2013, 464 pages)

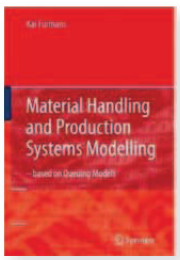
Kennedy, award-winning author of "The Rise and Fall of the Great Powers" and a renowned historian, provides a glimpse into the strategies used to win World War II. "Engineers of Victory" is a nuts-and-bolts account of how the leaders' grand strategy was carried out by the ordinary Soldiers, scientists, engineers and businessmen responsible for realizing their commanders' visions of success. In January 1943, President Franklin Delano Roosevelt and British Prime Minister Winston Churchill convened to establish the Allied objectives for ending the war against Germany and Japan. These included controlling the Atlantic and the air over western and central Europe, and taking the fight to the European mainland. A little over a year later, these ambitious goals had nearly all been accomplished. Kennedy's book reveals how.



KAIZEN IN LOGISTICS AND SUPPLY CHAINS

by Euclides A. Coimbra
(New York, NY: McGraw-Hill Professional, 2013, 384 pages)

Coimbra is a managing director of Kaizen Institute Iberia and an authority in the design of supply chain and logistics systems, having led international consulting project teams at Nestlé, Volvo, Rusal, Bosch and other companies. In this book, he gives a highly detailed explanation of how Kaizen (continuous quality improvement) principles can transform logistics and streamline supply chain processes. Continuing the themes from the best-seller "Gemba Kaizen" by Masaaki Imai, Coimbra expands on how these ideas have been successfully applied, including a case study. The work contains a wealth of additional information in more than 200 photographs, flow diagrams, value stream maps and tables.

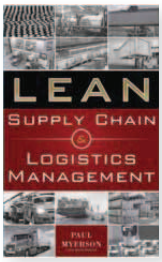


MATERIAL HANDLING AND PRODUCTION SYSTEMS MODELLING – BASED ON QUEUING MODELS

by Kai Furmans
(New York, NY: Springer, 2013, 150 pages)

This book helps explain the major influences for inventory and lead times. Furmans notes that stochastic effects—which occur through a combination of predictable and random behavior or events—are mostly ignored when designing material handling or production systems. Based on this knowledge, he concludes that it is possible to identify areas of improvement in material handling systems. Furmans uses his experience as the chair of logistics at the Universität Karlsruhe and as the former head of the research group Material Handling Systems to bridge the gap between stochastic modeling and practical engineering, by combining the theoretical background with modeling examples in several areas of application. This book is a useful supplement to master's and Ph.D. courses for students interested in engineering and operations management.

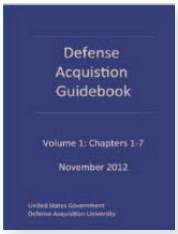
RECOMMENDED READING LIST

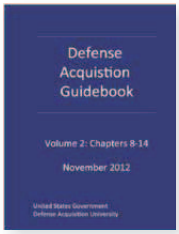


LEAN SUPPLY CHAIN AND LOGISTICS MANAGEMENT

by Paul Myerson
(New York, NY: McGraw-Hill Professional, 2012, 292 pages)

This practical guide shows how to identify and eliminate waste in an organization's supply chain and logistics function. Myerson, who has an M.B.A. in physical distribution and more than 30 years' experience providing supply chain strategies to companies, goes into both basic and advanced Lean tools, as well as specific Lean implementation opportunities. Real-world examples and case studies demonstrate how to use this powerful strategy effectively to realize significant, long-term improvements and bottom-line savings.

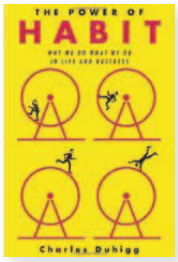




DEFENSE ACQUISITION GUIDEBOOK, VOLUMES 1 & 2

Defense Acquisition University
(Seattle, WA: CreateSpace Independent Publishing, 2012; Vol. 1, 688 pages; Vol. 2, 546 pages; available online at **https://dag.dau.mil/Pages/Default.aspx**)

This is the November 2012 version of the Defense Acquisition Guidebook, in two volumes (Vol. 1, Chapters 1-7; and Vol. 2, Chapters 8-14). The guidebook is designed to complement policy documents by providing discretionary best practices that members of the AL&T workforce can tailor to the needs of each program. AL&T professionals should use this guidebook as a reference supporting their management responsibilities. Chapters cover topics such as program strategy, life-cycle logistics, test and evaluation, and program management. Depending on the subject, a chapter may contain general background information, tutorials and/or discussions of the detailed requirements for each milestone decision and phase. All chapters contain nonmandatory staff expectations for satisfying the mandatory requirements in DOD Instruction 5000.02, "Operation of the Defense Acquisition System."



THE POWER OF HABIT: WHY WE DO WHAT WE DO IN LIFE AND BUSINESS

by Charles Duhigg
(New York, NY: Random House, 2013, 400 pages)

An award-winning New York Times business reporter, Duhigg explores why habits exist and how they can be changed. Using his ability to distill vast amounts of information into engrossing narratives, Duhigg creates a new understanding of human nature and its potential for transformation. Along the way, he shows why some people and companies struggle to change despite years of trying, while others seem to remake themselves overnight. Habits aren't destiny, as Duhigg shows: By harnessing this new science, we can transform our businesses, our communities and our lives.

A wealth of suggested reading titles is in GEN Odierno's professional reading list, online at ***http://www.history.army.mil/html/books/105/105-1-1/index.html****. Is there a book you'd like to recommend for this column? Send us an email at* ***armyalt@gmail.com****. Please include your name and daytime contact information.*

NOT SIMPLY 'SMALL MEN'

A Soldier gets help adjusting her prototype Generation III IOTV from a fellow Soldier Aug. 21, 2012, at Fort Campbell, KY. Both women are with the 1st Brigade Combat Team Female Engagement Team, 101st Airborne Division (Air Assault). This prototype was designed specifically for the needs of female Soldiers, with shorter torso length and other improvements for a tighter and more contoured fit. (Photo by Megan Locke Simpson, The Fort Campbell Courier.)

THEN & NOW

1980 & 2012

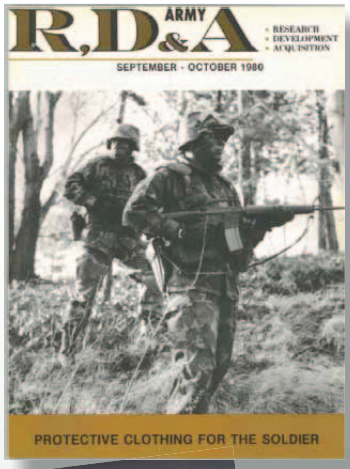
For its September-October 1980 issue, the Army RD&A newsmagazine (now Army AL&T magazine) interviewed COL Robert J. Cuthbertson, commander of what was then called the Natick Army Research and Development Command, for an issue devoted to protective clothing for the Soldier. Cuthbertson noted "that the Army system 'buries' the individual Soldier under the category of 'combat support-other'; changing this approach would be a step in the right direction," he said.

Fast-forward to 2012, when Time magazine named female body armor one of its Best Inventions of the Year for 2012. That's alongside self-inflating tires, the Tesla Model S sedan, the Civilization Starter Kit and NASA's Z-1 space suit. It's likely that the body armor Soldiers use today was about as impossible to imagine in 1980 as an electric car with a body style and performance rivaling a Jaguar, a suit that will enable astronauts to survive in deep space, or do-it-yourself versions of "the 50 most important machines required for modern life"—much less an Improved Outer Tactical Vest (IOTV) designed specifically for women.

In its pithy write-up of the new body armor, which was designed in a collaborative effort of the Natick Soldier Research, Development, and Engineering Center and Program Executive Office (PEO) Soldier, Time noted, "Women are not small men." The new version provides a better, more secure fit for female Soldiers.

MAJ Joel Dillon, the assistant product manager at PEO Soldier who is responsible for soft armor, noted that all of the female Soldiers in the 101st Airborne Division who tested it in a head-to-head comparison with the current IOTV chose the new version. "It was just really obvious to me that the form, fit, and function are definitely what we were shooting for." That kind of focus is a long way from "combat support, other."

To see a video explaining the changes made to make the IOTV fit women better, go to ***http://www.youtube.com/watch?v=XyDVcz2pvDM****. For more information on the article in Time, go to* **http://techland.time.com/2012/11/01/best-inventions-of-the-year-2012/slide/all/***. For a historical tour of AL&T over the past 52 years, visit the Army AL&T magazine archives at* ***http://asc.army.mil/web/magazine/alt-magazine-archive/****.*



U.S. Army Acquisition Annual Awards

2013 CALL *for* NOMINATIONS

It is time for the U.S. Army Call for Nominations for the following awards. The winners of these awards (excluding the David Packard and Workforce Achievement awards) will be presented at the 2013 U.S. Army Acquisition Annual Awards Ceremony this fall.

The **Army Acquisition Excellence Awards** recognize an Army acquisition workforce member and/or team whose performance and contributions set them apart from their peers. The awards directly reflect the outstanding achievements in support of the Army's Soldiers and its transformation initiatives. The call for nominations for these awards is from **March 6 to May 3.**

The **Secretary of the Army Project and Product Manager (PM) and Acquisition Director (AcqDir) Awards** applaud the PM and AcqDir whose outstanding contributions and achievements merit special recognition and exemplify exceptional leadership within the AAC. The call for nominations for these awards is from **March 13 to May 10.**

The **David Packard Excellence in Acquisition Award** recognizes the DOD civilian and/or military organizations, groups or teams who have made highly significant contributions that demonstrate exemplary innovation and best acquisition practices, reflecting achievements that exemplify goals and objectives established for furthering life-cycle cost reduction and/or acquisition excellence in DOD. The call for nominations for this award is from **March 28 to May 10.**

The **Under Secretary of Defense for Acquisition, Technology and Logistics Workforce Achievement Award** has been established to encourage and recognize excellent performance by members of the defense acquisition workforce in acquiring products and services for DOD. This program recognizes individuals (military or civilian) who represent the best in the various acquisition workforce disciplines. The call for nominations for this award is from **March 28 to May 10.**

The **Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)) Contracting Noncommissioned Officer (NCO) Award for Contracting Excellence** applauds the ASA(ALT) Contracting NCO whose outstanding contributions and achievements merit special recognition and demonstrate exceptional leadership within the AAC. The call for nominations for this award is from **April 11 to June 6.**

The **Director, Acquisition Career Management Award** is reserved for the Army Acquisition, Logistics and Technology Workforce member who has shown outstanding performance and made conspicuous, significant and long-lasting contributions to the AAC over the course of his or her career. The nominee's career should span a minimum of 20 years of federal government and/or military service. The call for nominations for this award is from **May 1 to June 21.**

For more information on the awards and upcoming call for nomination dates, please go to our website at http://asc.army.mil.

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"All of the focus areas in BBP 2.0 are important, and they each contribute to improved acquisition outcomes in unique, complementary ways."

Hon. Frank Kendall
Undersecretary of Defense for Acquisition, Technology and Logistics

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