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ARMY AL&T

APRIL–JUNE 2016

FEATURES

ON THE COVERS

It's probable that the future of Army sustainment will not look like the recent past. The world is increasingly complex and interconnected, and the challenges the Army must be prepared to confront will mean that the force must be ready and equipped for the unpredictable. That includes such difficult noncombat endeavors as NATO's Resolute Support Mission in Afghanistan, highlighted on the second of this issue's two covers.

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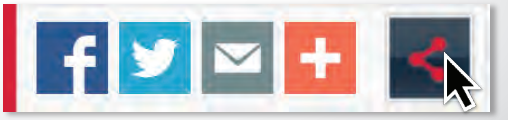

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That plus sign means there's more! More information, that is. There's only so much room between the front and back covers of Army AL&T, and that's why even die-hard hard-copy readers will want to check out the electronic extras available on the app and online version of Army AL&T.

Go to **http://usaasc.armyalt.com/** or use the iOS or Android app and look for the + icon to find additional content available online.

Hear a powerful and passionate talk by Afghan President Ashraf Ghani on the necessity of both economic investment and design ingenuity to rebuild broken states, featured in "**OPERATION: PROCUREMENT REFORM**," an examination of how long-term procurement reform—coupled with transparency, accountability and oversight—can reduce corruption in Afghanistan. It's part of our special section on the Resolute Support Mission.

Ensure your success in using sustainment information systems by exploring the top 10 things you need to know about CAISI and CSS VSAT, in "**LESSONS FOR THE LONG HAUL**."

From program management to performance-based logistics to reliability, glean the Army's collected knowledge in the Defense Acquisition University's Acquisition Proven Practices and Lessons Learned, referenced in "**GROUND TRUTH: LESSONS LEARNED**."

Find more information on "Assured PNT—A Path to Resilient Positioning, Navigation and Timing," which serves as a primer for our examination of pseudolites in "**BEYOND GPS**."

Delve into the Army's cloud computing strategy, referenced in "**REACHING FOR THE CLOUD**."

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@ Email Nelson McCouch III
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From the Editor-in-Chief

When I was a kid, I wanted to add turn signals to my bike. I thought it would be cool to be riding along and slide a switch on my handlebar to let the kid behind me know if I was going left or right. (Don't judge me; it was cool at the time.) In the store, I saw a big chrome blinker with a wire and thumb switch that you could add to your bike. Neat! Several dollars later, I attached the switch to the handlebar, ran the wire along the top tube and attached the turn signal indicator to the seat post. Added batteries, and off I went!

Well, it worked great for the first few minutes. After a bump or two, it worked intermittently. Then, after a hard day of riding with my friends, it never worked again. Poor design, cheap materials and no kid-testing led to one disappointed young boy.

By now you're asking, "What the heck does that have to do with the Army, Army acquisition or the theme of this issue, sustainment?" Everything! Unlike a car, or a bike, for which sustainment equates to maintenance, military sustainment equates to acquisition products with properties allowing them to last for decades and flexible platforms able to meet military needs far into the future. At a program executive office where the equipment is designed, developed and delivered, sustainment is the difference between a product that works and one that doesn't deliver—or, by another measure, the difference between a disappointed boy and a dead Soldier.

In the world of science, for experimental results to be valid, they must be repeatable. If scientists can't reproduce the results, the results are not considered real. Now, substitute "sustain" for "reproduce" and you can see what sustainment means to acquisition. If the production process can't produce the required number of products; if there's a material weakness; if the product doesn't last because of a design flaw; if it just plain breaks because stress factors were determined improperly; or if maintenance procedures are poorly written—then the product is not sustainable.

Sustainment is a part of every facet of acquisition—the products, processes and tactics. It has to be "baked in"; sustainment isn't something that can be added later. Everybody has a stake in sustainment, from the requirements generators at the U.S. Army Training and Doctrine Command, through designers and developers, to the operators in the field.

Just what is sustainment, given that virtually no one outside of the military even recognizes it as a word? Several stories in this issue delve into what sustainment means to different Army stakeholders and why it's important. For some, sustainment is in the technology that enables data to be stored and retrieved so that it's available anywhere, anytime. See what the CIO/G-6 is doing to explore the cost-saving benefits of remote software sustainment in "Reaching for the Cloud." Want a more traditional viewpoint? Learn how Army and Marine Corps commands joined forces with a major defense contractor to create a novel way to sustain the U.S. howitzer fleet in "Orchestrating Sustainment."

Looking beyond the military, private industry has its own sustainment challenges. Like the Army, CSX Corp. has heavy equipment to maintain, from 50-year-old locomotives to cutting-edge electronics, and a large workforce to train and coordinate to accomplish this sustainment mission. Take the "A" train with CSX Chief Operating Officer Cindy Sanborn in "Sustainment on the Rails," and understand why she's excited to come to work every day.

Finally, I'd like to welcome the Hon. Katrina McFarland as acting assistant secretary of the Army for acquisition, logistics and technology and Army acquisition executive. Read her inaugural column on Page 6 and get to know her vision for Army acquisition.

Questions, comments, suggestions? Please send me a note at **ArmyALT@gmail.com**. I look forward to hearing from you!

Nelson McCouch III
Editor-in-Chief

THE EYES HAVE IT

SPC Peter Johnson, left, and SPC Daniel Oladejo, biomedical science technicians with the U.S. Army Institute of Surgical Research, make adjustments to the shock tube in February at Fort Sam Houston, Texas. The shock tube is designed to simulate exposure to explosions similar to what Soldiers may encounter in combat, generating data that are crucial to research aimed at caring for Soldiers who suffer from conditions affecting their eyes. (U.S. Army photo by SGT Aaron Ellerman, 204th Public Affairs Detachment)

FROM THE [ACTING] ARMY
ACQUISITION EXECUTIVE
THE HONORABLE KATRINA MCFARLAND

People, Products *and* Processes

Acting AAE committed to Better Buying Power, funding R&D and supporting the workforce

Since its inception, the United States Army has answered the call to protect our nation and safeguard our way of life. We are the greatest land force the world has ever known. We demonstrate our strength when we adapt to rise against evolving threats, and we are always ready for our next mission—whenever and wherever it may be. The Army Acquisition Corps, in turn, has a duty we hold sacred: to design, deliver and sustain the critical enabling capabilities our Soldiers need for mission success so that our Army can always achieve and maintain dominance. I am honored to join this impressive team as your acting assistant secretary of the Army for acquisition, logistics and technology (ASA(ALT)).

None of us gets to choose when the next threat confronts our nation. Constant readiness—with a continued focus on modernization in a time of ongoing fiscal uncertainty—is how we ensure that our Soldiers will maintain the decisive edge against evolving threats.

After my arrival in this office, I outlined my three priorities for ASA(ALT) to guide our endeavors in this mission: people, products and processes.

PEOPLE

One of the key tenets of the Better Buying Power program is professionalizing the acquisition workforce—our most critical asset. While serving as president of the Defense Acquisition University (DAU), I oversaw the development and expansion of acquisition curriculum and supported learning opportunities for over 150,000 members of the Defense Acquisition Workforce. The ASA(ALT) team has been equally dedicated to the professional development of the Army Acquisition Workforce and to strengthening the capacity of the acquisition, procurement, requirements and logistics enterprises to deliver affordable equipment to our Soldiers.

We must continue to prioritize this endeavor to ensure that our Soldiers maintain their advantage. The Army Acquisition Workforce is entrusted with being effective

SOLDIER SCIENCE
SGT Zachary Howard of 4th Battalion, 17th Infantry Regiment (4-17 Infantry), attached to the 2nd Armored Brigade Combat Team, 1st Armored Division (2-1 ABCT), operates a PD-150 Soldier-borne sensor during Network Integration Evaluation 16.1 in October 2015 at Fort Bliss, Texas. The 4-17 was conducting a demonstration for distinguished visitors on the capabilities of manned-unmanned teaming systems, an example of the innovation that must continue in order to ensure the Army's readiness for the next engagement. (Photo by SPC Aura E. Sklenicka, 2-1 ABCT Public Affairs)

OPENING DOORS TO KNOWLEDGE
Dr. Matthew Kurman, left, a member of the Engines Research Team of the U.S. Army Research Laboratory, explains the work of the lab to DAU fellows touring the Vehicle Research Laboratory on Aberdeen Proving Ground, Maryland, in February. The fellows are participants in DAU'S Senior Service College Fellowship, a 10-month program designed to develop effective civilian leadership in DOD acquisition. As such, they exemplify the kind of professional development that can strengthen the capacity of the acquisition, procurement, requirements and logistics enterprises to deliver affordable equipment to Soldiers. (Photo by Conrad Johnson, U.S. Army Research, Development and Engineering Command)

stewards of Army resources and with providing for the Army's current and future needs. With such a critical responsibility, it is imperative that we do all we can to develop the workforce by providing training opportunities and resources for professional growth. We will foster a culture of teamwork, mutual respect, adaptability and the highest levels of professionalism.

PRODUCTS

The products that the people of the Army Acquisition Workforce develop are the tools our Soldiers need to safeguard their decisive advantage on the battlefield. We must continue our efforts to design and deliver breakthrough technologies. To maintain our technical superiority, we have been dedicated to science and technology (S&T) investments that will drive our Army into the future. We have made steady progress on this front, but we cannot rest on our laurels. This commitment to innovation must continue to ensure that we are ready for our next engagement, whenever and wherever that may be.

For example, we will continue our efforts to upgrade the Army's aviation portfolio via the Joint Multi-Role Technology Demonstrator and Future Vertical Lift programs. We will work to mitigate the risk of aviation accidents by exploring solutions for degraded visual environments, allowing our Army aviators to operate in any environment, day or night, regardless of weather conditions. We must do the same for our ground forces. When we invest in S&T innovations, we invest in our vision for the U.S. Army—a force capable of meeting challenging fiscal climates head-on and maintaining our technological superiority over our adversaries.

PROCESSES

As mentioned previously, I am dedicated to upholding the guidelines of the Better

EQUIPPING THE ROTATIONAL FORCE
Workers load an M109A6 Paladin onto a trailer at the Port of Klaipeda, Lithuania, in December 2015. The 624th Movement Control Team, 39th Transportation Battalion (Movement Control), 16th Sustainment Brigade oversaw the loading of the Paladin and other pieces of equipment for the prepositioned European Activity Set. The shipment was bound for Coleman Barracks in Mannheim, Germany, for servicing, storage and ultimately use by the next rotational force, as part of current Army strategy to prepare for the next conflict. (Photo by SSG Michael Behlin, 10th Press Camp Headquarters)

FUTURE FLIGHT?
The Army's development of its Future Vertical Lift fleet, of which one prototype is shown, is an example of the kind of long-range S&T investment that will drive the Army into the future. (U.S. Army photo)

Buying Power program as a means of strengthening and reforming the acquisition process. The Army is facing significant challenges with rapidly increasing threats and decreasing modernization budgets. For years, its research and development (R&D) and acquisition accounts have declined at a significantly faster rate than the Army's top-line budget.

To meet these challenges, the Army acquisition community must continue to work toward achieving affordable programs; controlling life-cycle costs; incentivizing productivity in both industry and government; eliminating unproductive processes and bureaucracy; and improving tradecraft in acquisition. Our Soldiers need superior technologies and innovations more than ever—yet our ability to procure and field these solutions will be in jeopardy if we do not continue to streamline the acquisition process and make wiser choices for our return on investments.

As we pursue next-generation technologies to mature our aging fleets and portfolios, we must remember that it is not enough to modernize our technology—we must also continue to modernize our methods of acquiring it if we are to maintain our technological edge. Only then can we successfully deliver the capabilities our Soldiers need to accomplish their mission.

CONCLUSION

In this issue of AL&T magazine, you will discover how each of these three elements plays a crucial role in sustainment. To quote from the U.S. Army Training and Doctrine Command's "The United States Army Functional Concept for Sustainment, 2016-2028," "The provision of sustainment is an integrated process, involving people, systems, materiel, health services, and other support, which is inextricably linked to operations." To be successful in sustaining operations until mission accomplishment, we need the right people, products and processes.

Sustainment is intimately tied to our call to service. Like the Army acquisition enterprise's mission to constantly provide the best for our Soldiers, sustainment involves a persistent need to see each mission through. It is not enough to deliver materiel and solutions to our warfighters on the battlefield; we must also sustain the equipment we develop until the work is done and each Soldier comes home. This timely issue of AL&T magazine will illuminate the part all of us play in achieving this vision.

Our Army is witnessing a time of great change, but we remain steadfast in our pursuit of our ongoing goals. All of us in ASA(ALT) are charged with doing our part to strengthen Army acquisition. As your leader, I commit and challenge you to commit yourselves to achieving lasting acquisition reform.

Together, we will work toward attaining affordable and realistic requirements in Army programs. We will continue to leverage the groundbreaking technologies coming from small businesses. We will continue to recognize the pivotal role of the Army's S&T innovations in shaping the force of the future. We owe it to our Soldiers to constantly put our best foot forward, so that we may deliver the lifesaving solutions and critically enabling capabilities they need for mission success. The ASA(ALT) team has a long legacy of rising to challenges, and I am confident that our commitment to our Soldiers will continue to guide us to excellence.

SPOTLIGHT:

MR. BRIAN MARTIN

The contracting chess game

MR. BRIAN MARTIN

COMMAND/ORGANIZATION:
U.S. Army Medical Research Acquisition Activity, U.S. Army Medical Research and Materiel Command

TITLE:
Director and principal assistant responsible for contracting

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

YEARS OF SERVICE IN WORKFORCE: 29

EDUCATION:
B.S. in accounting, Pennsylvania State University

AWARDS:
Army Office of Small Business Programs FY14 Contracting Professional of the Year Award for Exceptional Program Support

Today's operational climate forces senior leadership to do more with less: balance budget cuts and staff departures against increasing workloads. For Brian Martin, director and principal assistant responsible for contracting (PARC) at the U.S. Army Medical Research Acquisition Activity (USAMRAA), it's "the hardest part of my job." But Martin sees that challenge as a chess game. "It's about putting the pieces in the right spots every day to make sure we can accomplish our mission," he said.

Martin came to Army acquisition in 1987, following career advice from a supervisor at the Department of the Interior Office of the Inspector General. Since then, he says, "it's hard to identify the biggest change, because there have been so many. It seems to be much harder today to award a contract than it was in 1987. Although there have been great advances in databases, electronic systems, etc., we do not seem to be as efficient and able to award contracts as quickly."

The biggest challenge he has faced in his career is a restructuring first implemented at USAMRAA in 2013. "Implementing change of that magnitude takes a few tweaks and adjustments and is a process that grows over time," he said. "It's been about two years since the change was put in place, and we're starting to see some benefits from it: gains in productivity and timeliness and an increased focus on developing specialists. With the new structure, our contracting people can focus on becoming experts on a specific type of contract, while in the past they were expected to be generalists."

What do you do in your position, and why is it important to the Army or the warfighter?

As the director and PARC at USAMRAA, a subordinate command of the U.S. Army Medical Research and Materiel Command (USAMRMC), at Fort Detrick, Maryland, I manage and direct a staff of approximately 225 people who provide contracting and assistance agreement support to the USAMRMC as well as other reimbursable customers. The importance of contracting and assistance agreement support is often overlooked when considering the needs of the warfighter. Without contracting and assistance agreement support for the medical research and development that USAMRMC is tasked with performing, many of the products, vaccines and medical devices that benefit the warfighter before, during and after conflicts would not be viable. Additionally, many of the end products that were

developed as a result of contracting and assistance agreements likely will become commercial products and benefit the general public as well.

As PARC, I am responsible for the performance of all delegable contracting functions delegated by the head of the contracting activity, which includes appointing contracting officers in a manner that minimizes the potential for undue influence and protects them from internal or external pressure to perform improper acts.

What's the greatest satisfaction you have in being part of the Army Acquisition Workforce (AAW)?

It gives me great satisfaction to see a vaccine, drug, product or medical device that my team has supported from basic research to development eventually being provided to the warfighter for their use. Even though I do not buy ships, tanks or airplanes, what I do purchase and provide will not only benefit the warfighter, but it will most likely benefit the general public as well.

During your tenure with your organization, what was the biggest challenge you faced, and how did you overcome it?

One of the biggest challenges that I have faced is a total restructuring of the USAMRAA, which required changing from a purely customer-focused organization to a hybrid organization that was structured by specialties—e.g., material, services or assistance agreements—while maintaining a customer focus. Initially, this was a difficult concept for the staff to comprehend. To be successful, my team had to be willing to make minor adjustments after the initial structural plan was rolled out. Clear and open communication with the staff was extremely important to the success of this major change.

TEAMMATES
Before coming to acquisition, Martin, shown working with Charity Keen, USAMRAA administrative program coordinator, was an auditor for the Department of the Interior Office of Inspector General. (Photo by Crystal Maynard, USAMRMC)

What program accomplishment are you most proud of, and why?

Many years ago, I was involved in a program that investigated the effects of blast overpressure on the warfighter. The findings from this research effort eventually led to improved hearing and body protection for our warfighters, and that is very gratifying to see.

What one skill or ability is most important in doing your job effectively?

I feel that the most important skill that is necessary to perform my job effectively is to have an open mind and be creative to deliver the best acquisition strategy to fulfill customer needs.

Can you name a particular mentor or mentors who helped you in your career? How did they help you? Have you been a mentor?

Throughout my career I have been fortunate enough to have many outstanding mentors. Even though many of these individuals were not aware that I was obtaining a wealth of information from observing them, they were nonetheless very important to my growth as an acquisition professional. Because of my own experiences being mentored, I have now established several mentor-mentee relationships with my staff. I am currently mentoring three people with varying levels of AAW knowledge. One is new to the AAW, one is a first-line supervisor and one is a mid-level group leader. I enjoy being able to share information and strategies that have been helpful to me in my move up the career ladder, and I also like to share the mistakes that I have seen people make in the pursuit of leadership positions.

What advice would you give to someone who aspires to a career similar to yours?

Take advantage of every opportunity that is offered to you to expand your knowledge and experience in regard to contracting and leadership. Be willing to step outside of your comfort zone and try new and inventive ways to get things done.

—MS. SUSAN L. FOLLETT

DIGITIZED PRECISION
The New Jersey National Guard's 3rd Battalion, 112 Field Artillery trains on upgraded, digitized howitzers during an August 2015 live-fire event at Joint Base McGuire-Dix-Lakehurst, New Jersey. Crews can emplace the new, digital howitzer much more quickly, then fire rounds faster and with more accuracy. (Photo by Audra Calloway, Picatinny Public Affairs Office)

Orchestrating SUSTAINMENT

Sustain internally, outsource the whole job—or recognize that, as complex as artillery systems are these days, few organizations have all of the expertise needed to sustain them. So two Army commands, two Marine Corps commands and a major defense contractor collaborate to sustain the U.S. howitzer fleet.

by Mr. Christopher Hatch

Sustaining towed artillery platforms for the Army, U.S. Marine Corps (USMC) and allied customers is one of the challenges the Program Executive Office (PEO) for Ammunition's Program Management Office for Towed Artillery Systems (PM TAS) faces on a daily basis. As the life-cycle manager for the M777A2 and M119A3 howitzer systems, as well as survey equipment, PM TAS continuously evaluates sustainment strategies to find the right balance to achieve the ultimate goal: operational availability.

Modern weapon systems rely on advanced technology, materials, electronics and software to meet warfighter requirements. Gone are the days when one organization could sustain such systems alone. DOD recognized this in 2009, requiring program managers (PMs) for acquisition category I (ACAT I) and PMs with multiple products to have product support managers who are specially trained to orchestrate sustainment. PM TAS takes an enterprise approach to managing sustainment, leveraging the strengths of organic and contractor organizations.

While the M119A3 primarily uses a traditional organic sustainment strategy, the M777A2 uses a hybrid, relying on both organic organizations and contractors, with a performance-based life-cycle sustainment (PBLCS) strategy approved by the USMC and the Army acquisition executive (AAE).

SUSTAINMENT ENGINEERING

PM TAS prides itself on its hands-on approach to engineering and sustainment, working directly with the U.S. Army Armament Research, Development and Engineering Center (ARDEC) and the original equipment manufacturers to develop and support the systems we manage. While ARDEC's Benét Laboratories at Watervliet Arsenal, New York, is well known for its expertise on cannon systems, not as many people are familiar with the organic expertise found at ARDEC for the digital fire control systems (DFCS) on the M777A2 and M119A3.

While the original M777A2 DFCS was developed by industry, the software required to operate the system was developed in-house by ARDEC's software lab, level 5 certified under the Capability Maturity Model Integration (CMMI) process improvement program. The knowledge gained in developing the system-level software, and having full intellectual property rights, has allowed the PM to use a different approach while addressing obsolescence and refresh of the systems' aging electronic line replaceable units (LRUs). LRUs include items like computers, displays and power supplies. PM TAS is using a "breakout strategy," breaking out each individual LRU and developing specifications and competitively procuring each of them using the Army Contracting Command – New Jersey's (ACC-NJ) expertise to ensure best value, which is critical in an environment of declining budgets.

These strategies not only lower costs through competition, but further reduce them by eliminating the additional layer of costs from a prime system contractor. There is no free lunch, as this approach does increase the need for internal staff. However, developing organic, in-house expertise that can be used on multiple platforms pays long-term benefits as electronics obsolescence and refresh of aging components are two of the largest cost drivers in sustainment. With systems expected to last up to 50 years, the electronics may undergo four or five refresh cycles during a system's life cycle.

PM TAS and the Fires Center of Excellence (Fort Sill, Oklahoma) are now using the lessons learned from these efforts in the development of strategies for the next generation of survey equipment. The existing, legacy system uses proprietary, contactor-developed software. One of the strategies under consideration is government-owned software that would enable the PM to develop a systems architecture and compete the individual LRUs that constitute the system. This will not only save initial procurement costs, but pay long-term dividends in sustainment.

PBLCS STRATEGY

The performance-based life-cycle sustainment (PBLCS) strategy leverages the strengths of the following organizations:

- U.S. Army TACOM Life Cycle Management Command.
- Defense Logistics Agency.
- USMC Logistics Command.
- U.S. Army Research, Development and Engineering Command.
- USMC Systems Command.
- BAE Systems.
- PM TAS, PEO Ammo; PEO Land Systems (USMC).

SUPPLY CHAIN MANAGEMENT

Another key to operational availability is delivering the right parts at the right time to the warfighter. The M119A3 program uses a traditional organic system with TACOM providing all spare parts to support demand from the field and the Anniston Army Depot (ANAD), Alabama. PM TAS works with TACOM to identify high-demand items and has several active redesign efforts to improve system reliability, which will increase operational availability while reducing the demand for spare parts. One such effort is a major redesign of the recoil system, whose main function is to absorb and control the rearward movement of the cannon and return it to its original firing position. The recoil system, and the spare components required to maintain it, were identified as a significant cost driver in sustaining the M119A3. Working with PM TAS, engineers at ARDEC simplified many of the system's components while reducing the total part count, resulting in a more reliable, easier and less costly system to maintain. (See "***Adapting Artillery***," Page 32, Army AL&T magazine, October – December 2014.)

The M777A2 PBLCS strategy uses a competitively awarded firm fixed-price contract with BAE Systems to provide unique spares as well as various engineering and logistics support activities. These activities include tracking part requisitions and collecting reliability data from the field to identify opportunities to reduce operational costs. A life-cycle cost model was developed and is used to give the government return-on-investment data so the PM can make data-driven decisions. Sometimes the analysis results

ADJUSTING TO TARGET
A gun chief and his assistant gunner assigned to the 82nd Airborne Division Artillery check the sights on their M119A3 howitzer during a gun raid as part of a Jan. 20, 2016, division artillery readiness test on Fort Bragg, North Carolina. PM TAS and ARDEC streamlined the M119A3 recoil system by reducing the total part count, resulting in a more reliable, easier and less costly system to maintain. (Photo by CPT Joe Bush, 82nd Airborne Division Artillery)

in redesign of components while other times just a change in maintenance strategy will reduce support costs. The Defense Logistics Agency and TACOM, which is the primary inventory-control activity, provide the spares. A key tenet of the PBLCS approach is end-to-end supply chain management of spares (vs. stockpiling) to achieve defined delivery metrics developed to achieve high operational availability. Under the terms of this contract, BAE Systems owns the spares until delivery, so the government does not have to fund the "iron mountain" of spares that risk excessive stockpiling or obsolescence.

In 2008, PM TAS conducted a business-case analysis to support the services' approval of the PBLCS strategy. The analysis estimated an initial $109 million cost avoidance from the establishment of an organic pipeline. The warfighter achieved an additional $7 million per year in cost avoidance, as competing the contract resulted in lower spare parts cost for a total cost avoidance of $179 million over the potential 10-year period of performance for this contract. The contractor is evaluated annually on multiple areas of performance, including spare parts delivery, and awarded subsequent one-year award terms (up to a 10-year maximum duration) if they meet performance metrics. This contract is currently in its third year of performance, and operational availability has consistently exceeded 90 percent.

A TEAM APPROACH

Soldiers and Marines perform all field- and sustainment-level maintenance to organically maintain and support both howitzer systems. ANAD and Marine Corps Logistics Base Barstow (California) perform depot-level maintenance for the Army and Marine Corps respectively. The depots rely on the organic supply chain for M119A3 parts and the hybrid (organic and contractor) supply chain for M777A2 parts.

Originally, the M777A2 PBLCS contract did not include metrics for unique parts being delivered to the depots. Seeing the benefits to depot workflow planning, TACOM and Marine Corps Systems Command have worked with PM TAS to include these metrics as part of the performance measures under the PBLCS contract.

LOCK AND LOAD
Soldiers from 4th Battalion, 319th Airborne Field Artillery Regiment (FAR), 173rd Airborne Brigade prepare an M119A3 howitzer for firing during the Exercise Shardana at Capo Teulada, Italy, conducted in October 2015. PM TAS continuously evaluates field artillery sustainment strategies to find the right balance to achieve operational availability. (U.S. Army photo by Visual Information Specialist Graigg Faggionato)

The M777A2 has been in service since 2005, and recently workers at ANAD found several cracked cradles, a major structural component fabricated from thin-wall titanium, on howitzers undergoing routine overhaul. While these particular howitzers had seen extensive use in Afghanistan, the entire fleet was at potential risk. In response, TACOM released a maintenance advisory message requiring all M777A2 cradles to have an external visual inspection, and the Marine Corps released a Naval message to the same effect. In addition to the external visual inspection, PM TAS conducted internal inspections of the suspect areas using endoscopic equipment, much like doctors use to perform internal examinations on patients, as this method can detect small stress indicators before they propagate into cracks. Under the PBLCS contract, BAE is also part of the team performing metallurgical analysis, establishing condemnation criteria and developing repair options. All of this information is critical to developing the coordinated fleet-wide repair strategy, ensuring continued operational availability for the fleet.

TRAINING PRODUCTS

As part of initial fielding, PM TAS provides operator and maintainer new equipment training to Soldiers and Marines. PM TAS, in concert with ARDEC and the Program Executive Office for Simulation, Training and Instrumentation (PEO STRI), is developing and fielding a suite of training aids, devices, simulations and simulators (TADSS) for the M777A2 and M119A3 towed howitzers. The purpose of these products is to provide operators and maintainers tools to maintain their proficiency on their assigned platforms. The importance of TADSS products has increased with shrinking training budgets as well as the number of nonstandard missions that Soldiers and Marines perform in the current threat environment.

The TADSS suite being fielded includes individual training products for the section chief and various crew members, as well as crew-level products whereby laptops are linked together to provide a collective training capability with multiple crew members operating a single virtual howitzer. The PM is also fielding a classroom version of these products at specific Army and USMC locations.

All these products are based on the howitzers' tactical software, providing a realistic experience to the user, and will be updated as the M777A2 and M119A3 DFCS software is updated. With ARDEC developing and maintaining the DFCS software and TADSS products, the government retains full rights for the update of products and can also use them to train Soldiers and Marines when new DFCS software is released.

CONCLUSION

The value of these approaches is reflected in the interest allied nations have expressed in joining the M777A2 sustainment contract. Australia and Canada have been actively monitoring sustainment performance as part of a memorandum of understanding signed in 2012. The Navy International Programs Office has negotiated and is staffing a project arrangement that would allow allied participation under the PBLCS contract. Allied participation would save the United States a projected $1 million annually.

These approaches are not without obstacles as they have met resistance under the traditional Army budget and funding process. The current Army funding process has sustainment funding flow through the U.S. Army Materiel Command, which

IT TAKES A TEAM
The sustainment team for the howitzer includes two Army commands, two USMC commands and a major defense company. (SOURCE: U.S. Army Acquisition Support Center)

has the latitude to redistribute funding according to changing priorities during the year of execution. A PBLCS approach requires funding to flow to the PM at the start of the fiscal year so the strategy can be successfully executed. The Army is currently evaluating the value of PBLCS strategies while developing the process for funding PBLCS in a system traditionally geared to organic support.

In spite of these funding challenges, PM TAS' innovations and performance are getting noticed. The assistant secretary of the Army for acquisition, logistics and technology is using the M777A2 experience with PBLCS to develop a pilot template of how it measures sustainment for ACAT I programs (M777A2 is ACAT II). The goal is to establish metrics for various sustainment elements with program assessments, called operational sustainment reviews, conducted every five years.

Just as our weapon systems require technology innovations to stay one step ahead of our adversaries, the way we sustain systems requires a fresh approach to ensure that we provide our warfighters the systems they need in an evolving threat environment.

For more information on PM TAS products, go to ***http://www.pica.army.mil/peoammo/***.

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MINE THE TRAINING
Soldiers from Alpha Troop, Regimental Engineer Squadron, 2nd Cavalry Regiment load dummy rounds onto an M139 Volcano mine system during Saber Junction 15, an exercise held in April 2015 at the U.S. Army's Joint Multinational Readiness Center in Hohenfels, Germany. Systems like the Volcano require periodic attention to ensure that they do not become obsolete. (U.S. Army photo by SPC John Cress Jr.)

AREA DENIAL

Winning in a complex world means that the Army must prepare for combined arms maneuver and wide area security, and that means area denial. However, systems like FASCAM have significant problems, including age and policy restrictions, so it falls to PM CCS, TACOM and ARDEC to sustain an aging stockpile and design successors.

by Mr. Edward Chin, Mr. Christopher E. Kramer (LTC, USA, Ret.) and Mr. Ken R. Schulters

CAM and WAS

According to Army Doctrine Publication 3-0, "Unified Land Operations," "Combined arms maneuver is the application of the elements of combat power in unified action to defeat enemy ground forces; to seize, occupy, and defend land areas; and to achieve physical, temporal and psychological advantages over the enemy to seize and exploit the initiative. It exposes enemies to friendly combat power from unexpected directions and prevents an effective enemy response. Wide area security is the application of the elements of combat power in unified action to protect populations, forces, infrastructure, and activities; to deny the enemy positions of advantage; and to consolidate gains in order to retain the initiative."

The Army has significantly increased its emphasis on training for combined arms maneuver (CAM) and wide area security (WAS) operations in contemporary and future operational environments.

This increased emphasis has led to a dramatic resurgence in the demand for and usage of many legacy area-denial systems that had been infrequently employed during the last decade-plus of counterinsurgency operations, which did not require extensive or large-scale operations by mounted and dismounted forces against peer or near-peer level mounted and dismounted forces.

Large-scale operations frequently require a means of shaping large blocks of terrain—that is, enabling or restricting the movement of enemy forces through the employment of explosive ground-based munitions and other means. In the past, mines performed this function. Future operations will require more advanced munitions that are policy-compliant and much more capable than the "dumb" conventional mines they will replace.

MUCH WORK TO DO
The Volcano system, shown here before refurbishment, is a mass scatterable mine delivery system that delivers mines by helicopter or ground vehicle. The age of such systems presents a variety of sustainment challenges, including battery life, changes in the air and ground vehicles that emplace them, and many others. (Photo courtesy PEO Ammunition)

The increase in terrain-shaping system usage has resulted in a variety of sustainment challenges. Compounding these challenges are the age and landmine factors inherent in some legacy Family of Scatterable Mines (FASCAM) systems.

Collaborative efforts by the Project Manager, Close Combat Systems (PM CCS) within the Program Executive Office (PEO) for Ammunition; U.S. Army Armament Research, Development and Engineering Center (ARDEC); and U.S. Army TACOM Life Cycle Management Command have provided extensive and successful support to the user community to overcome these challenges. The effects of this support are visible at the proponency level, at the level of units in the field, and at combat training centers.

Some of the sustainment challenges with legacy area-denial systems include system age; battery life and obsolescence; changes in ground and air prime mover platforms; the demand for and availability of repair parts; priority of sustainment funding; unit familiarity with maintaining and operating the systems; and evolving policy guidance and treaty requirements.

Military forces use FASCAM systems to rapidly emplace terrain-shaping obstacles onto specific geographic locations with the intent of altering or ceasing the enemy's movement in a manner desired by friendly forces, to gain tactical advantage. Multiple systems, both air and ground, exist to accomplish this goal.

A BATTERY OF CHALLENGES

One of the primary challenges with older systems that contain electronic components, such as the Volcano, is the constant advance of technology. Keeping pace with the rapid evolution of electronic technologies is a tremendous challenge, and systems like the Volcano require periodic attention to ensure they do not become obsolete.

Separately, many systems share a challenge with battery lifespan and performance. Many of the Army's advanced munition capabilities are particularly dependent upon battery lifespan and reliability, as these munitions require dependable, constant and immediately available power, and they cannot be attached to external power. Many batteries in the legacy FASCAM munitions systems such as the Volcano are embedded within the

INTERIM SOLUTION
A Volcano system after refurbishment. While ARDEC took the lead on system and subsystem technical data packages to find replacement parts for obsolete components, TACOM developed a new refurbishment process to get aging systems up to speed. But existing policies surrounding mine systems present other challenges. (Photo courtesy of PEO Ammunition)

individual munitions and are reaching or exceeding their design life. Since the munitions were designed with safety, reliability, performance and avoidance of tampering as key priorities, the batteries were placed in the munition. This leads to sustainment issues when unused munitions approach the end of their predicted shelf life.

The batteries were designed to provide the required power for full operation of the munitions for many decades after they are fielded. However, the chemicals in the batteries may break down over time, which may reduce the amount of available power or the time it takes to provide the power to the system when needed. This failure may be accelerated as harsh environmental conditions are encountered for prolonged periods of storage. While battery performance and shelf life have greatly improved, all batteries have a finite lifespan. Ongoing studies on current FASCAM system batteries will inform decisions on the appropriate sustainment strategies needed to continue to provide the FASCAM capability.

The ongoing battery studies employ known aging strategies and techniques to predict shelf life. These include exposing the batteries and electronic components to extreme temperatures and elevated humidity levels for as long as months at a time. The high temperatures and humidity levels are typically higher than the storage and operating environments that would be encountered when deployed, but lower than the known conditions that cause failures or unwanted changes. For example, if liquid water is a key component in a tested sample, researchers may not want to expose it to 212 degrees Fahrenheit at normal atmospheric pressure since boiling may have a negative effect on the sample.

However, if the sample is typically used in an environment where temperatures reach 160 degrees Fahrenheit, then exposing the sample in the study to 200 degrees may provide the needed data. In the case of FASCAM, operating temperatures may reach higher than 100 degrees in the desert at the hottest point during the day even when shaded from direct sunlight. The batteries and electronics are designed to survive desert conditions; however, there is a negative impact on battery shelf life after repeated and prolonged exposure to such conditions.

Another technique used to predict shelf life is to cycle the temperature and humidity through high and low extremes,

SCATTERABLE MINES 101

Both air and ground platforms deliver the current U.S. scatterable mine systems. Air Force and Navy aircraft deliver the **GATOR system** from dispensers mounted on the aircraft. Each dispenser delivers antitank (AT) and antipersonnel (AP) mines. These mines have self-destruct times of 4 hours, 48 hours and 15 days. Mines self-destruct to eliminate residual hazards on the battlefield.

The **Modular Pack Mine System (MOPMS)** is a man-portable, 160-pound, suitcase-shaped mine dispenser that contains 17 AT mines and four AP mines dispensed on command through hardwire or radio. The dispenser may be emplaced long before dispensing mines. The mines self-destruct at 4 hours, but this can be recycled up to four times.

The **Area Denial Artillery Munition (ADAM)** and **Remote Anti-Armor Mine (RAAM)** systems are both launched from 155 mm howitzers inside modified projectile housings. One ADAM contains 36 AP mines. These mines have self-destruct times of 4 hours, 48 hours and 15 days. One RAAM projectile contains nine magnetically fuzed AT mines; each mine has the same self-destruct times as the ADAM.

The **M139 Volcano Mine Dispensing System** is a scatterable mine delivery system developed and fielded in the late 1980s and early 1990s that delivers 960 mines per mission by Black Hawk helicopter or ground vehicle. These mines are either AT only or a mix at a ratio of five AT to one AP mine. It also has self-destruct times of 4 hours, 48 hours and 15 days. It is one of the most visible and important legacy systems receiving expanded support, as the resurgence in its use has driven a holistic surge in sustainment activity from the Soldier level to DA. Efforts to re-educate the field on the system, recapitalize it, renew repair-parts stockage and integrate the system on modernized prime movers are ongoing.

FASCAM systems employ munitions that contain self-destruct features. Thus they are nonpersistent mine systems and were allowed for use in combat situations as required. Since Jan. 1, 2011, U.S. forces have not been authorized to employ non-self-destructing, non-self-deactivating or nondetectable land mines. Beyond the danger to noncombatants that self-destruction removes, munitions that self-destruct enable friendly forces to move through previously seeded areas after the self-destruction window.

to simulate the changing conditions during a 24-hour period. Constant changes in temperature and humidity could weaken or degrade seals, cause surfaces to deform or warp and cause joints to separate, which may break electrical circuits and prevent the flow of electricity when needed.

As samples are removed from the test chambers, they are checked to determine if they are still operable, whether they are working as they were originally designed and how much degradation has been encountered. Mathematical analysis provides an estimate of predicted lifespan. The shelf life study is scheduled to be completed by September 2016.

PAST ITS USE-BY DATE

While battery shelf life is a concern, it is not the sole failure mode for advanced munitions. Plastics and electronic components are also subject to deterioration over time. Potting material may lose its integrity and no longer provide the physical support required for high G-forces during launch and ground impact. From the electronic side, solder can break down and cause the growth of "tin whiskers" that can create unwanted paths for current to flow. Additionally, circuit boards can delaminate, breaking needed pathways for current flow.

With the Volcano system, ARDEC began its support by reviewing the various system and subsystem technical data packages to identify modern replacements for the obsolete legacy components. TACOM then developed a new repair-and-replacement process at its depot facility to refurbish the aging Volcano systems. TACOM proved out this program on a limited quantity of Volcano systems in FY15, and is now planning to continue the sustainment work when funding is made available.

PM CCS and ARDEC initiated a long-term study of currently fielded FASCAM systems to look for evidence of deterioration as the result of the different failure modes mentioned previously. The goals of this study include determining remaining shelf life of the systems and applying lessons learned to the development of new FASCAM systems.

Some of the sustainment challenges with legacy area-denial systems include system age; battery life and obsolescence; changes in ground and air prime mover platforms; the demand for and availability of repair parts; priority of sustainment funding; unit familiarity with maintaining and operating the systems; and evolving policy guidance and treaty requirements.

Policy guidance also introduces legacy system sustainment challenges. There are both age and treaty compliance challenges inherent in most legacy FASCAM systems. U.S. landmine policy and two 2014 White House announcements on antipersonnel landmines (APL) ban the use of persistent landmines, which, if not removed or destroyed, can remain deadly indefinitely, and restrict the use of APL outside of the Korean Peninsula.

In September 2014, the White House published "Fact Sheet: Changes to U.S. Anti-Personnel Landmine Policy." This document stated that the U.S. "will not use APL outside the Korean Peninsula; not assist, encourage, or induce anyone outside the Korean Peninsula to engage in activity prohibited by the Ottawa Convention; and undertake to destroy APL stockpiles not required for the defense of the Republic of Korea."

The use of persistent landmines ended in 2010. Since that time, U.S. forces had only been allowed to employ self-destructing or self-deactivating APLs and antivehicle landmines (AVL). This left U.S. forces with two legacy area-denial system options for employment outside the Korean Peninsula: the M87A1 Volcano and the Remote Anti-Armor Mine. The current, available FASCAM systems lack "human-in-the-loop" control capability and scalable lethal and nonlethal effects. Additionally, current U.S. FASCAM systems are approaching or are beyond their original design life.

CONCLUSION

To address this change, and to meet the warfighting requirements in unified land operations anywhere in the world, the joint force is developing rapidly emplaceable and treaty-compliant scatterable munition systems. PM CCS is leading an effort, directed by the Office of the Secretary of Defense, to establish a program of record to develop an Ottawa Convention-compliant air-delivered, operator-controlled munition system that will provide both antivehicle and antipersonnel munitions and will replace the current GATOR system, with an initial operating capability goal by FY25.

Despite the various challenges faced with the resurgence and continued needs for the legacy weapon systems, PM CCS is aligned with the Army's priority to use existing capabilities in new ways to provide increased lethality, survivability and overmatch to both the mounted and dismounted joint force in the close fight. The FASCAM replacement with human-in-the-loop initiated effect will ultimately provide the commander with the capability to prevent, shape and win in order to accomplish their mission and meet the needs of the 21st century operational environment.

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SPOTLIGHT:

MR. RICKY DANIELS

Leadership and Cousin Lloyd

MR. RICKY DANIELS

COMMAND/ORGANIZATION:
Logistics Information Systems (LIS), Project Manager Army Enterprise Systems Integration Program, Program Executive Office for Enterprise Information Systems

TITLE:
Product lead, LIS

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

YEARS OF SERVICE IN WORKFORCE: 24 (16 on active duty; 8 as a DA civilian)

EDUCATION:
B.S. in education, The Citadel

AWARDS:
Army Achievement Medal (2 Oak Leaf Clusters (OLC)), Army Commendation Medal (4 OLC), Meritorious Service Medal (4 OLC), Legion of Merit, Commander's Award for Civilian Service, Superior Civilian Service Award

Having spent more than 20 years in acquisition, as a civilian and a Soldier, Ricky Daniels is in the position of sustaining systems he once worked on developing and fielding. What has he gained from what he calls "a 360-degree perspective"? "Never lose sight of the requirements. I've seen a lot of systems that didn't make their milestones because their requirements weren't feasible or reasonable."

Daniels is now the product lead for Logistics Information Systems (LIS) in Project Manager Army Enterprise Systems Integration Program, part of the Program Executive Office for Enterprise Information Systems (PEO EIS).

He joined the Army Acquisition Corps in 1992, transferring from an active-duty post with the Air Defense Artillery (ADA). "I was a system automation officer assigned to Product Manager Maneuver Control Systems, which was doing some exciting things for Soldiers back then. I had the opportunity to work with combat developers, the Army Materiel Systems Analysis Activity and the Operational Test and Evaluation Agency as a test officer to obtain materiel release and fully field the system. I saw the impact that acquisition had across the entire Army and felt I could serve the Army better by procuring and sustaining information systems than through my ADA assignments."

Retiring from active duty in 2002 at the rank of colonel, Daniels worked in the private sector for five years before returning to the Army eight years ago as a DA civilian. Much of his leadership style was shaped by his 24 years on active duty and the honor code of The Citadel, which he attended before joining the Army. "One of the most important things I've learned over the course of my career is something that I first heard from my cousin Lloyd, whose farm I worked on as a kid. Lloyd always told me, 'If you're going to do something, do it right.' "

What do you do, and why is it important to the Army or the warfighter?

As the product lead for LIS, I lead all acquisition cost, schedule and performance activities associated with development, testing, training and post-production life-cycle sustainment for the Army's tactical LIS. This includes five Acquisition Category III program-of-record products covering 12 separate software baselines and associated hardware and peripherals.

LIS delivered more than 30 change package releases for FY15, encompassing more than 3,059 change items that improved LIS performance and, by extension, logistics support to the Soldier in the focused logistics domain, including Class V accountability for conventional, guided missile and large rocket munitions; field- and sustainment-level management of ground and aviation maintenance operations; and receipt, store and issue operations at tactical and installation supply support activities.

As the number of information assurance vulnerability alerts (IAVAs) increased, LIS successfully analyzed more than 4,000 updates, resulting in the build, test and distribution of more than 450 critical IAVA patches. Our success allowed the management of more than 200 supply support activities; all ground and aviation maintenance operations; ammunition management facilities; and unit supply and property accountability operations at all echelons—totaling billions of dollars across the entire Army.

If you could make the rules or break the rules, what would you change?

I would like to see more flexibility in the source selection process, especially in situations where a best-value contract is a better vehicle than a lowest-price-technically-available [LPTA] contract. Sustaining our systems takes a unique skill set, and when we're forced to go with low price over best value, our contractors are forced to cut salaries and their best people move on. You can't expect someone to do the same work for half of what they used to be paid. There are some situations where best-value contracts are perfect—a long-term assembly line, for example, where you know what your costs and deadlines will be. But in the software field, where we're constantly getting changes in requirements to address new issues, LPTA is the better approach. If I could change one thing, it would be to give project managers more flexibility to choose which option is right for them. There's no one-size-fits-all solution.

What do you see as the most important points in your career with the Army Acquisition Workforce, and why?

As the director of the U.S. Army Communications-Electronics Command (CECOM) Software Engineering Center – Fort Lee (SEC-Lee) in Virginia, I led a workforce that included Army acquisition, logistics, DA civilians and private industry partners in developing and sustaining key and critical combat service support software applications for the Army and other DOD acquisition programs. I successfully transitioned the life-cycle sustainment management of the logistics systems from the LIS product management office to SEC-Lee, which significantly increased the SEC's role in support of PEO EIS.

Can you name a particular mentor or mentors who helped you in your career? How did they help you?

William C. Dates, project manager for Integrated Logistics Systems, set the standard as my acquisition professional mentor. He was a results-driven program manager and information technology executive with vision and hands-on experience in leading multimillion-dollar initiatives. As his deputy, I was able to glean the knowledge, skills and experience to design, develop and implement information systems in the areas of logistics and personnel management. I still seek his advice and guidance today.

What's the greatest satisfaction you have in being a part of the Army Acquisition Workforce?

One of my proudest moments was leading the effort to integrate disparate LIS hardware configurations to employ one common hardware platform. This action involved the designation of common platform hardware specifications and the procurement of more than 50,000 LIS laptops and 24,000 printers that effectively reduced the logistics-IT hardware footprint from 15 laptop and printer models to one standardized laptop and printer configuration. This effort simplified field-level system sustainment requirements, reduced sustainment-level logistics costs and prepared units for the deployment of the next-generation, enterprise-level Global Combat Support System – Army. We reduced CECOM field repair activity spares stockage levels by more than 60 percent and improved their customer response time for LIS hardware maintenance.

—MS. SUSAN L. FOLLETT

FIELD SUPPORT
Soldiers with the 106th Support Battalion replace a generator on an M1A1 Abrams main battle tank at Camp Shelby Joint Forces Training Center, Mississippi, in July 2015. Soldiers tasked with performing combat field repairs often rely on communications enabled by CSS SATCOM to order replacement parts. (Photo by SPC Brittany Anderson, Headquarters and Headquarters Company, 155th Armored Brigade Combat Team)

LESSONS *for the* LONG HAUL

An urgent need leads to a quick off-the-shelf acquisition—a common story. PEO EIS adds two footnotes: Buy the data rights upfront, and get the original manufacturer to write the technical manual. If you end up relying on that quick purchase for years to come—not a far-fetched possibility in this budget environment—the costs of those two things will be justified by big savings.

by MAJ Jonathan W. Judy and Ms. Ruby P. Hancock

Army logisticians around the world depend on a worldwide satellite communications (SATCOM) system that was conceived as a quick fix, and consequently the Army jumped a few steps in the usual acquisition process to get it fielded. The system—the Combat Service Support Very Small Aperture Terminal (CSS VSAT)—was never intended to be a permanent solution.

A response to a Joint Urgent Operational Needs Statement, it provides an invaluable capability: a global SATCOM network dedicated to the Army's logistics information systems. "Because of the mandate to get something out quickly, CSS VSAT was a commercial off-the-shelf product introduced at the production and deployment phase," said Peter Nesby, program officer for Combat Service Support SATCOM in the Program Executive Office for Enterprise Information Systems (PEO EIS).

Ten years on, PEO EIS' Product Lead for Defense-Wide Transmission Systems (PL DWTS), which owns the CSS VSAT mission, continues moving CSS VSAT along the unusual path from quick fix to enduring system, by returning to earlier stages of the usual acquisition life cycle to transition the project to long-term sustainability. PL DWTS planned to rely on contractor logistics support, as many rapidly fielded

GEARING UP
Soldiers and civilians participating in Network Integration Evaluation 15.2 prepare a CSS VSAT to support the May 2015 exercise. Because it does not have the data rights for CSS VSAT, the government cannot reverse-engineer comparable parts, and the Army is limited to purchasing replacement parts through the original equipment manufacturer. (Photo by MAJ Jonathan W. Judy, Project Manager Defense Communications and Army Transmission Systems (PM DCATS))

programs do. Now, transitioning to organic sustainment, PL DWTS faces the challenge of maintaining and updating the 3,620 fully fielded systems that are projected to remain in service indefinitely—well beyond the initial expectation that Warfighter Information Network – Tactical (WIN-T) terminals would replace CSS VSATs by 2009.

GETTING TO SUSTAINMENT

"Today we depend on a limited number of contractor's field engineers for CSS VSAT maintenance and repair," said LTC Jeff Etienne, the PL DWTS. "Transitioning from contractor support to organic [support] enables us to provide more comprehensive support than would be practical or affordable otherwise. It also provides numerous benefits to Soldiers in terms of decreasing operational readiness downtime, and supports the DWTS strategic mission to provide the best-value solutions for enabling information dominance Armywide."

Organic sustainment replaces the contractor's six regional field engineers with 13 field service representatives from the U.S. Army Communications – Electronics Command (CECOM). Their efforts will be supplemented by the introduction of on-site support from 786 active-duty Soldiers from the 94 series military occupational specialty (MOS)—electronic and missile maintenance.

To provide the same level of support to fielded CSS VSATs as organic support makes available, PL DWTS would have to more than double the number of contractor's field engineers. "Our [94 series] Soldiers are already trained to do stuff like this," said CW4 Michael Nelson, capability developer for integrated logistics supportability at the Combined Arms Support Command (CASCOM). "We do it with other systems already. So budgetwise, it should be an improvement because Soldiers are doing what they're actually supposed to be doing." Another advantage of adding support from 94 series Soldiers who are co-located or nearly co-located with the system will be to reduce operational readiness downtimes to days—or even hours—after repair parts are received. Current downtimes for CSS VSATs can stretch from one to four months while the system waits for the contractor field service representative assigned to that region to be available to perform the repair—on top of the five- to six-week wait to receive the necessary parts.

As part of the transition from contractor-led sustainment to organic sustainment, PL DWTS completed the logistics demonstration of CSS VSAT in July 2015. This timing was unusual for a product that began fielding nearly a decade ago and has since supported critical operations worldwide in combat zones and special humanitarian missions such as for Hurricane Katrina in 2005, Pakistan earthquake relief in 2013 and Operation United Assistance: Ebola in 2014. The standard Army acquisition life cycle requires programs to conduct a logistics demonstration, a rigorous evaluation of the program's maintenance concept and supportability strategy, before the initial operational test to evaluate the readiness of the system support package; fielding occurs sometime after that.

With successful completion of the logistics demonstration, CSS VSAT moves one step closer to providing enhanced sustainment support for the long term, well beyond its original life span. It also confronts two lessons learned that should apply to all rapid fielding initiatives during their early planning stages.

BUY DATA RIGHTS UPFRONT

First, it is critical to include procurement of the technical data rights in the original competition. Given the originally planned short life cycle for CSS VSAT,

paying the upfront cost for the technical data rights did not seem justified; there was simply no intention to sustain the system long term. However, other programs in planning stages should err on the side of caution when making this decision, and favor paying the cost of procuring the data rights from the outset if a reasonable likelihood exists that the program will ever be extended into sustainment.

Because it does not have the data rights for CSS VSAT, the Army is limited to purchasing replacement parts through the original equipment manufacturer. No competition exists among vendors, and the government cannot reverse-engineer comparable parts.

The Better Buying Power (BBP) tenet of promoting effective competition, first outlined in BBP 1.0 and continued in BBP 2.0 and now 3.0, underscores the importance of planning the procurement of data rights early in the product life cycle to leverage competition. Experience confirms the importance of this initiative. For rapid fielding programs, an intellectual property plan that includes procuring data rights must consider—and weigh heavily—the likelihood of extended contingency operations.

GET THE TECHNICAL MANUAL

With the data rights now too expensive to procure for CSS VSAT, the government has spent substantial time and money to produce a technical manual for the system from scratch. This leads to the second lesson learned: If the program might transition to organic sustainment at any point in the future, build the technical manual into the original contract.

While the system was in development, the CSS VSAT contractor did not produce a technical manual for the government. Only now are the contractors who support the system developing a technical manual based on their years of experience in the field. System developers generally possess a more intimate knowledge of the system as a whole and should be able to produce a detailed technical manual more readily than the field engineers who have been involved only with maintaining it.

BETTER LATE THAN NEVER
SPC Matthew J. Cavey, left, of the 4th Battalion, 3rd U.S. Infantry Regiment (The Old Guard) and SGT Benford J. Holland of the Alabama Army National Guard simulate troubleshooting a CSS VSAT system error during the logistics demonstration. The demonstration was completed in July 2015—unusual timing for a product that was fielded a decade ago and has since supported military and humanitarian efforts around the world. (Photo by Jeff Wright, PM DCATS)

Relying on field engineers' expertise will produce a high-quality manual but will greatly lengthen the process because it requires translating hands-on, trial-and-error approaches to diagnose and repair failures and convert that information into reliable, step-by-step instructions that Soldiers can use in the field. This delays the entire transition of the system to CECOM sustainment.

Validation and verification of the CSS VSAT technical manual will take more than a year and stretch into FY17, representing the longest piece of the transition process. Validation and verification events require page-by-page scrutiny of the manual by the system's proponent, CASCOM, working with the program office to confirm the accuracy and clarity of every step, every word and every National Stock Number. The time and costs associated with this roundabout way of developing a technical manual should provide a cautionary tale for other rapid fielding initiatives. Upfront procurement of the technical manual, as with data rights, enables industry competition and ultimately provides the government with a better price.

CONCLUSION

As CSS VSAT approaches readiness for organic sustainment, the lessons brought to light in that transition are already a consideration in planning for the next iteration of the capability. PL DWTS, CASCOM, HQDA G-4's U.S. Army Logistics Innovation Agency and end users are capturing requirements that will expand the role of CSS VSAT to carry more enterprise resource planning systems and more maintenance data in the program's next generation.

When the current terminals are replaced to meet those expanding requirements, the PL DWTS acquisition strategy will seek to buy a terminal that is supportable over the long run, with a technical manual developed by the original equipment manufacturer and technical data rights included in the initial competition.

Other input for future iterations will come from the WIN-T transport convergence effort. Transport convergence seeks to collapse all of the Army's disparate transport layers (for example, the intelligence system Trojan Spirit; MED VSAT, the joint telemedicine network; CSS VSAT; and PAO VSAT, the public affairs system) into the WIN-T network by moving transports off of commercial teleports and onto Army regional hub nodes. This effort will significantly cut the Army's spending to lease use of commercial SATCOM networks by moving the traffic onto a singular Army network.

The current generation of CSS VSATs is well-suited to integrate into this effort and continue meeting the sustainment community's enduring requirement for real-time communication to support sustainment, repair and resupply efforts at the front. While the Army will replace some networks' terminals immediately with WIN-T terminals, CSS VSATs will assimilate into WIN-T at the transport layer.

For now, the current and future success of CSS VSAT remains a top priority for the G-4, and PL DWTS is prepared to continue providing worldwide network access for Army sustainers by keeping CSS VSAT mission-ready for the long term.

For more information, go to CSS VSAT's website, ***https://peoeis.kc.army.mil/csscomms/SiteAssets/default.html****, or the PEO EIS website,* ***http://www.eis.army.mil/index.php/programs/dwts****; or contact Peter Nesby, program officer for CSS SATCOM, at 703-806-8650 or* ***peter.l.nesby2.civ@mail.mil****.*

TROUBLESHOOTERS
SGT James A. Hayes of the Alabama Army National Guard, rear, and CPL Damian L. Morton of the 4th Battalion, 3rd U.S. Infantry Regiment (The Old Guard) use the CSS VSAT technical manual to troubleshoot a staged critical system fault in June 2015. Because the contractor did not produce a technical manual while the system was in development, the government has spent substantial time and money to produce one that Soldiers with the 94 series MOS, like Hayes and Morton, can use to repair the CSS VSAT system in the field more quickly and cost-effectively than contractor logistics support allows. (Photo by Jeff Wright, PM DCATS)

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GSA Wants to Hear From You:

How do we improve the MILSTRIP Ordering System?

The U.S. General Services Administration (GSA) is seeking active-duty military users of the Military Standard Requisitioning and Issue Procedures (MILSTRIP) to participate in a customer survey. MILSTRIP is used to order supplies from GSA Global Supply, a one-stop source to shop and order government-supplied products that can be delivered to civilian and military locations around the world.

To participate in the survey, users may provide GSA with their initial contact information online via [http://www.gsa.gov/milstripsurvey] and will be added to a customer survey coming this spring.

Feedback collected from the survey is confidential and will be used to make improvements in GSA's supply support and shipments to military locations worldwide.

GSA

CLOSE INSPECTION
Technician Joe Decindio conducts a final inspection on an AN/TPS-75 air surveillance antenna at Tobyhanna Army Depot, Pennsylvania. Data from the Army Acquisition Lessons Learned Portal suggest that sustainment costs must be integrated in the initial life-cycle cost of a program. (Photo by Steve Grzezdzinski, U.S. Army Communications-Electronic Command)

GROUND TRUTH: LESSONS LEARNED

From program management to performance-based logistics to reliability, the Army has discovered—sometimes the hard way—that failing to develop a sustainment strategy for its systems from the outset can be costly.

by Mr. Nathan Herbert

The Army has fielded many great systems to defeat any adversary. In addition to those fielded systems, the Army is currently developing 18 major defense acquisition programs and more than 100 other lower-categorized systems. During system development, Army acquisition professionals are responsible for crafting a sustainment strategy that ensures that the materiel, logistics and process-support operations will remain in place until the mission is completed. Sustainment continues to have huge cost implications, often reaching billions of dollars annually and typically accounting for nearly 60 percent of a system's total life-cycle cost.

Through the years of system acquisition, many sustainment lessons have been learned and documented in the Army's Acquisition Lessons Learned Portal (ALLP). The ALLP is a resource for members of the acquisition community to share lessons and best practices. Several lessons from the ALLP are presented below, addressing such key sustainment areas as program management, performance-based logistics and reliability.

PROGRAM MANAGEMENT

LL_670: The Army must plan to provide sufficient funding to maintain necessary hardware refreshes into the sustainment phase. The Army should also plan and coordinate refresh funding early in the program life cycle.

Background

While policies exist for technical and hardware refreshes, the costs of these refreshes are often not put into the program objective memorandum (POM) requests at program initiation. Instead, those costs are added in later years, at which time they are more difficult to fund. Without the ability to obtain new hardware, new software cannot be installed, and the systems become obsolete and incompatible as other systems continue to modernize.

Recommendation

Sustainment costs must be integrated in the initial life-cycle cost and appropriately called out in the corresponding POM years so that sufficient funding is available for refreshes.

LL_696: Develop system sustainment and operational tempo costs early in the cost estimating process and continually update and validate those figures.

Background

Because of conflicting guidance on the part of all parties involved, there was much confusion over how to plan for operation and maintenance appropriation costs as well as the responsibility for those expenses. A loosely structured sustainment plan compounded the confusion and resulted in the issuance of more conflicting guidance. Throughout the materiel development decision process, various stakeholders provided their input based on their understanding of the sustainment plan; however, that understanding varied among stakeholders, leading to muddled guidance.

Recommendation

Once a capability production document has been approved, establish a supportability integrated product team (IPT) to outline the logistics path forward and the required documentation. Involve personnel from logistics, software engineering, depot and other key organizations to assist with planning, document preparation and sustainment concerns. Also involve these players in the pre-briefing process to guide the sustainment vision and limit the confusion over the sustainment path. Get key stakeholders—the Deputy Assistant Secretaries of the Army for Cost and Economics and for Plans, Programs and Resources; the Assistant Secretary of the Army for Financial Management and Comptroller; and HQDA G-8, as well as sustainment and training representatives from the program evaluation group—to buy into the cost estimate.

MAKING CRITICAL ADJUSTMENTS

U.S. Army Aviation and Missile Command (AMCOM) logistics assistance representative Joe Peca provides recommendations to SGT Eric Urbanek, who makes a critical flight control adjustment on a Black Hawk helicopter at Redstone Arsenal, Alabama. Experience suggests the value of ensuring that a program have quantifiable supportability metrics, such as mean time to repair and maintenance downtime, for all phases of planning and execution. (U.S. Army photo)

SUPPORTABILITY

LL_76: Establish quantifiable supportability metrics and be proactive in staffing logistics and supportability documents.

Background

At the request of a program executive office (PEO), the Software Engineering

BUILD IT TO LAST
PFC Christian Hernandez, from 317th Brigade Engineer Battalion, 3rd Brigade Combat Team, 10th Mountain Division (3-10 MTN), Fort Polk, Louisiana, performs regular maintenance checks on a Mine Resistant Ambush Protected vehicle at Bagram Airfield, Afghanistan, in January. Information from the ALLP suggests that mechanical systems such as suspensions, drivelines and chassis systems should be designed specifically with weight growth in mind. (U.S. Army photo by SFC Nathan Hutchison, 10th MTN Public Affairs))

Institute was asked to publish a report documenting the actions taken by project managers within the PEO to develop, staff and obtain approval for their systems. The report describes issues encountered and recommendations that may help during milestone review preparation. Program observations pertaining to logistics and support include the following:

- The Office of the Assistant Secretary of Defense for Logistics and Materiel Readiness emphasized logistics planning and supportability.
- Supportability planning required upfront analysis and was not treated as an afterthought.
- It was extremely difficult to get comments on the supportability statement.

Recommendation

1. Ensure that there are quantifiable supportability metrics, such as mean time to repair and maintenance downtime, for all phases of planning and execution.
2. Identify ownership of the manpower estimate report, and identify potential problems with getting the report staffed and approved.
3. Highlight logistics supportability throughout the development phase to demonstrate an understanding of how the system will be supported after fielding. For example, update the systems engineering slide included in program briefing materials to include logistics supportability, and add a special interest item slide to include information about such issues as corrosion prevention and control and unique identification.
4. Communicate with the IPTs via telephone and email that the supportability statement will be made available for comment and eventual staffing.

LL_808: Determine the appropriate amount of equipment and its location to right-size the contractor field service representative (CFSR) workforce.

Background

To right-size the number of CFSRs, a program management office (PMO) divided the map into key locations, identified all locations where equipment was located, the number of pieces of equipment and the number of CFSRs, logistics area representatives (LARs) and information technology field support

CHECKING IT TWICE
Fitzgerald Sherman checks wiring harnesses for M1 Abrams tanks against a checklist of items needed for the assembly area of the Combat Vehicle Repair Facility at Anniston Army Depot, Alabama. According to data on the ALLP, a system reliability model should encompass all hardware and non-hardware elements. (Photo by Jennifer Bacchus, U.S. Army Materiel Command)

bases (ITFSBs). The PMO then broke down the type of LARs by region. At one time during fielding, there were 243 CFSRs on two separate contracts. When one contract ended, the PMO was able to reduce that number to 78 by working with the remaining contractor. By determining the amount of equipment and its location, the PMO was able to right-size the CFSR workforce and meet the PEO requirement of a 40 percent reduction by keeping one or two CFSRs per area.

Recommendation
Delineate a program's geographical footprint and divide it into regions before identifying the locations where equipment is placed. Determine the amount of equipment at each location and the number of CFSRs, LARs and ITFSBs in each region. Identify the optimum ratio of CFSRs, LARs and ITFSBs to equipment to right-size the workforce for the assets to be managed.

PERFORMANCE-BASED LOGISTICS

LL_607: Performance-based logistics (PBL) contracts must be managed by an informed team to ensure that they evolve with program life cycles and meet stakeholders' needs while managing conflicting guidance.

Background
The Office of the Secretary of Defense continues to recommend that programs consider PBL contracts as a cost-effective means of sustaining weapon systems. However, product offices are under pressure to reduce the staff and Army operation and maintenance funding needed to implement the often substantial PBL contracts.

PBL contracts can provide significant benefits for all stakeholders; however, it is a complex relationship that must be actively managed by a knowledgeable program management, engineering, logistics and acquisition team to ensure that the PBL contract evolves with the life cycle of the program and meets the current and future needs of the stakeholders while managing the sometimes conflicting guidance.

Supportability and sustainment planning must be based on performance-based goals, metrics and demonstrated progress. It is essential to have contractor data for new items to understand performance levels. Complex relationships will exist between program offices, contracting offices, testing personnel and contractors. Reaching agreement on performance metrics, how to acquire and validate data and how to assess progress can be complicated.

Personnel with an Army program with PBL experience made the following observations:

1. It is difficult to compete a PBL contract without adequate technical data.
2. It is difficult to plan the competition for a PBL contract because it can take up to two years to compete.
3. There are many options associated with a PBL contract, including repeated or augmented depots and which metrics to use. It is difficult to determine the right mix of options and metrics over time.
4. A cost-plus contract is necessary in the absence of technical data for the

system under development, and continuous monitoring is necessary to ensure that the government obtains proper value. A fixed-price structure is viable after cost and configuration have been stabilized.

Recommendation
Keep in mind that:

1. Since PBL contracts require significant staff to monitor, product offices require significant staff on hand.
2. PBL contracts must evolve as the system knowledge and configurations mature; otherwise, the contractor will not be incentivized to meet the changing needs of the program.
3. Contractors prefer long-term, fixed-price contracts.
4. The program office should study and recommend contract types, contract length and metrics, and incentives to drive contractor performance in efforts related to performance data collection and assessment.
5. Product offices should be funded and staffed so that they can effectively manage PBL contracts.

RELIABILITY

LL_391: Develop a system reliability model (SRM) using reliability block diagram analysis.

Background
The Center for Reliability Growth, a joint effort between the U.S. Army Materiel Systems Analysis Activity and the U.S. Army Evaluation Center aimed at improving reliability for Army systems, recommended the use of an SRM, a graphical depiction of a system with an underlying analysis, such as a reliability block diagram, a fault tree or an event tree, that identifies critical weaknesses in the system design. Reliability and design teams can use the SRM to influence and trace changes to the system design as well as track operational and sustainment costs.

Recommendation
The contractor should develop an SRM using reliability block diagram analysis. The SRM should consist of a system's lowest identifiable functions or elements and their relationships to one another. It should encompass all hardware and non-hardware elements, including commercial off-the-shelf equipment, non-developmental items, government-furnished equipment, software, human factors and manufacturing. The SRM should be used to generate and update reliability allocations and to identify critical elements in the system design.

LL_589: Mechanical systems such as suspensions, drivelines and chassis systems (doors, hydraulics, etc.) should be designed with weight growth in mind.

Background
Many systemic failure modes seen in the field relate to vehicle weight, specifically the addition of armor or other heavy kits.

Recommendation
Historical system weight growth should be investigated and new systems should be designed to accommodate similar weight growth where possible. Test and evaluation phases should evaluate vehicles at potential up-weighted configurations to identify possible future problems with add-ons.

LL_896: Significant reliability growth is achievable through proper contract planning and management.

Background
A countermeasures system was fielded as a quick reaction capability in response to a critical need in theater. Despite the technology's effectiveness and the program's high availability rates, system reliability was not optimal because of an emphasis on accelerated acquisition and fielding.

Deliberate contract planning and management have resulted in significant reliability growth over the past five years. Reliability has increased 162 percent since original fielding, from 309 hours mean time between mission-affecting failure in 2010 to 808 hours in 2015. This improvement is largely attributed to the government's emphasis on the Failure Reporting, Analysis and Corrective Action System (FRACAS).

Recommendation
Including robust FRACAS requirements in the prime contractor's statement of work and close government management of the FRACAS program can significantly increase system reliability. Program managers should require a full FRACAS investigation on every field return and require incorporation of corrective actions into the repair and production lines.

For more information on these and other Army Lessons Learned, go to the ALLP at ***https://allp.amsaa.army.mil****; Common Access Card login required*

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BACK TO HOME PORT
U.S. Logistics Support Vessel-2 CW3 Harold C. Clinger, crewed by 30 Army mariners, returns in October 2015 to Joint Base Pearl Harbor-Hickam, Hawaii, from a 139-day Pathways voyage. The concept involved joint multinational partners participating in a three-part series intended to increase readiness across the region through additional training while strengthening partner-forces relationships. (Photo by SFC Nicole Howell, 8th Theater Sustainment Command)

PACIFIC PATHWAYS

In an Indo-Asia-Pacific pivot, the Army employs land forces to train with partner nations, prepare for crises, project power and achieve economies of scale to overcome the 'tyranny of distance.'

by BG Kurt J. Ryan

In 1781, General George Washington, commander of the Continental Army, used French ships to sail a seasoned Army of Colonial Soldiers to the Virginia Peninsula. That Army surprised, then defeated the British commander, Lord Cornwallis, at the battle of Yorktown. Some claim this victory turned the world upside down. Sea power, combined with the transport of land forces, would become key to a young nation's ability to project power worldwide for the next 200 years and beyond.

Fast forward to 2014. Following nearly a decade and a half of rotational combat forces committed to fighting in the Middle East, a highly experienced and capable Army is mostly back home in the United States, training to meet new missions around the world. As outlined in the nation's recent defense strategy, President Obama initiated a "pivot" or "rebalance" to the Indo-Asia-Pacific region in 2012. The Army is testing new ways of engagement throughout this region of several nations that includes vast oceans, numerous island chains and major continents—all with large littoral populations. To get there and operate there, the Army is experimenting with an innovative employment concept known as "Pacific Pathways," or Pathways for short.

As the United States continues to implement a policy of rebalancing in the Indo-Asia-Pacific region, the Army is employing new ways and means to engage throughout this vast area. Its Pathways program entails leveraging military and contracted commercial

sealift, married with Army capability packages, to operate across the Pacific for two purposes: strengthening security cooperation and conducting crisis response. Since the Spanish-American War, the Army has had a vested interest in sustaining peace and stability in the region. A necessary element in support of this goal is the continued capability to sustain extensive, long-term sea basing operations throughout the Pacific region to maintain the ability to respond to security crises and assist in humanitarian assistance and disaster relief missions.

The first Pathway sailed from the West Coast in June 2014 with elements of the 2nd Brigade Combat Team (Stryker), 2nd Infantry Division from Joint Base Lewis-McChord, Washington. It traveled to Indonesia and Malaysia, where U.S. Soldiers participated in back-to-back exercises with Indonesian and Malaysian troops over the course of several weeks. Following these training events, the group sailed to Japan to participate in a bilateral exercise with the Japan Self-Defense Force. By November, the U.S. unit had returned to Washington, completing a five-month, 17,000 mile Pacific navigation during which time it not only participated in a number of training events, but also remained available in the theater to respond to regional crises, if needed.

The Army conducted three Pathways deployments in 2015 and participated in multinational exercises in Thailand, South Korea, the Philippines, Australia, Indonesia, Malaysia, Mongolia and Japan. Each deployment consisted of elements of a brigade combat team from the 25th Infantry Division. Three Pathways are scheduled for this year with plans for more in 2017.

Far from competing with the Navy or Marine Corps, the Pathways initiative in fact complements U.S. military engagement in the Indo-Asia-Pacific region.

BLENDING IN
An Indonesian soldier from the 1st Infantry Division of Kostrad secures the training area during the annual exercise Garuda Shield, West Java, Indonesia, in August 2015. Three Pathways events were conducted in 2015, at a considerable savings to U.S. taxpayers. (U.S. Army photo by SPC Michael Sharp, 55th Combat Camera)

A NEW WAY OF DOING ARMY BUSINESS

Although it seems like common sense to string together a series of otherwise disparate exercises, this represents a new way of doing business for the Army, enabling it to save money by reducing back-and-forth transportation costs for individual engagement exercises. At the same time, the Pathways initiative allows the United States to create a rotational presence in parts of the Pacific, where permanent basing may not be possible, thereby providing a quick response capability for humanitarian emergencies or regional crises.

By carefully sequencing training events along a Pathway and by using the same ship for scheduled rotation of Army forces to Korea and the approved transfer

NEW TARGETS FOR COOPERATION
U.S. Soldiers from 2nd Battalion, 27th Infantry Regiment, 3rd Infantry Brigade, 25th Infantry Division and Indonesian soldiers from 1st Infantry Division of Kostrad conduct tomahawk training during Garuda Shield in West Java, Indonesia, in August 2015. One of several stops on a 2015 Pathways deployment, Garuda Shield supports greater regional security and cooperation, and is part of the pivot to Asia announced by President Obama in 2012. (U.S. Army photo by SPC Michael Sharp, 55th Combat Camera)

of military hardware to foreign nations, the Army will save the U.S. government millions of dollars while also engaging its Pacific allies and partners. The three Pathways in 2015 combined training events that, if implemented in isolation, would have cost taxpayers twice as much, resulting in millions of dollars in savings over the course of a year.

Nevertheless, there are certainly areas where the Pathways program can be improved. For example, choosing the right ship is critical to agility and flexibility. Current laws and policy limit access to the most capable, cost-effective vessels, those that are owned by the government and managed by the Navy's Military Sealift Command. When U.S. government vessels are not available, the government prefers contracting U.S.-flagged commercial ships. When these ships are unavailable, the military must rely on contracting other commercial vessels. (Additional information about the program can be found at the Military Sealift Command website **http://www.msc.navy.mil/PM5/**.) Unfortunately, the U.S. Army in the Pacific currently lacks dedicated strategic and operational intra-theater-assigned sealift.

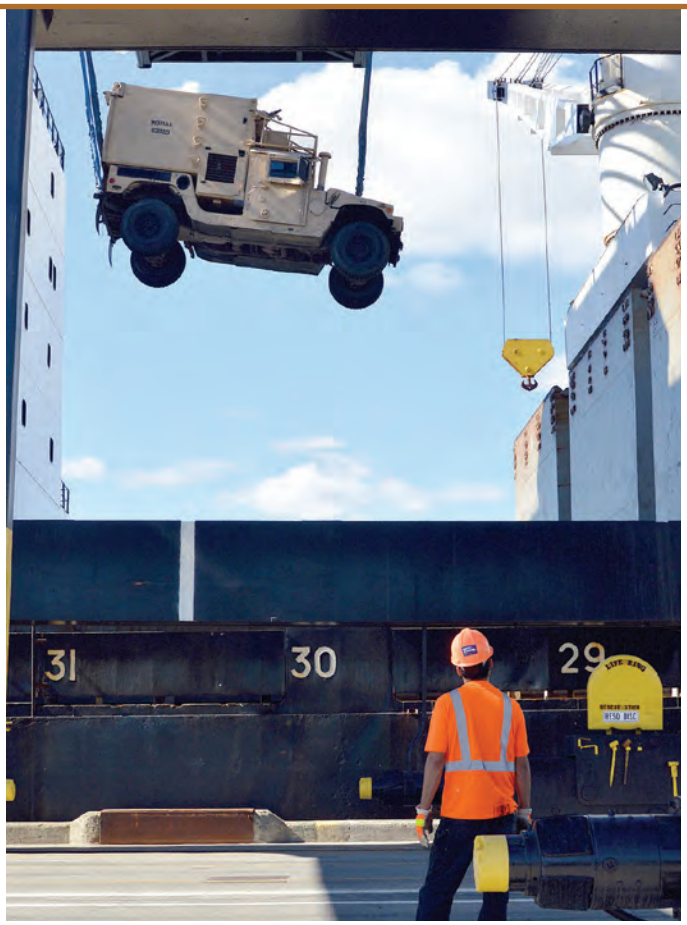
Dedicated strategic sealift vessels would make the Pathways initiative more effective than reliance on U.S.- or foreign-flagged commercial vessels by allowing access to shallower ports; enabling multiple loading and unloading options; providing secure communications suites; offering bunks for more troops; allowing for bulk fuel, ammunition and water storage; and providing maintenance and medical treatment facilities. At the same time, dedicated sealift would strengthen the capabilities of the U.S. Pacific Command.

Second, to increase the effective operational capability for units on a Pathways deployment, a tailored array of crisis response equipment and supplies should be part of the unit's ship manifest. For example, during typhoon season, the Pathways ship might also contain humanitarian crisis response equipment and supplies—such as emergency shelter supplies, food, bottled water and medical kits—in addition to the equipment necessary for the specific military exercises the unit plans to conduct.

To strengthen the ability of any Pathways unit to engage in crisis response, the Army must also strengthen the expeditionary mission command packages, preferably at the division level, and routinely exercise them as part of a comprehensive emergency deployment readiness exercise. These command-and-control elements could be structured and trained to fly on short notice for rapid deployment on a minimal number of cargo airplanes. Linking this rapidly deployable command-and-control capability with a Pathways unit could dramatically improve U.S. ability to respond to typhoons, tsunamis, other humanitarian disasters and other crises in the vast Indo-Asia-Pacific region.

CONCLUSION

Despite these benefits, skeptics have raised questions about the Pathways initiative. Some have claimed it infringes on already well-defined missions executed by the Navy and Marine Corps, the Washington Post reported ("Army's 'Pacific Pathways' initiative sets up turf battle with Marines," Dec. 29, 2013). Others maintain that the Pathways program may be a poor allocation of Army resources during a time of shrinking defense budgets. Still others argue there are more pressing demands for Army forces around the world, in light of emerging threats in Europe and the Middle East. The harshest critics see these moves as part of a broader effort by the Army to protect its share of the Pentagon budget, according to a recent post on National Defense magazine's blog ("Future of the Army in Asia: Less War, More Diplomacy," Jan. 26, 2014).



SUPPORT PACKAGE
Dockworkers at the port of Anchorage, Alaska, load military vehicles and equipment from the 1st Stryker Brigade Combat Team, 25th Infantry Division (Arctic Wolves) onto the ship Black Eagle for shipment to Japan for the annual exercise Orient Shield in August 2015. Following the exercise, the Arctic Wolves continued on to the Korean Peninsula to participate in the 2nd Infantry Division's combined warfighter exercise with the Republic of Korea's Army. Participation in both exercises is part of the Pacific Pathways initiative, which aims to strengthen security cooperation and improve crisis response capabilities. (U.S. Army photo by John Pennell, U.S. Army Alaska)

As the United States continues to implement a policy of rebalancing in the Indo-Asia-Pacific region, the Army is employing new ways and means to engage throughout this vast area.

Far from competing with the Navy or Marine Corps, the Pathways initiative in fact complements U.S. military engagement in the Indo-Asia-Pacific region. The region is obviously vast, and many crises—whether man-made or natural disasters—can occur with little warning. By placing units on a multimonth-long Pathway, the Army contributes to effectively meeting regional objectives for military-to-military engagement while also providing senior U.S. leaders with additional flexibility and options for responding to crises across the huge distances in the Pacific.

REGIONAL RESPONSE
Soldiers from 2nd Battalion, 27th Infantry Regiment, 25th Infantry Division patrol the woods during the Pacific Pathways exercise in Townsville, Queensland, Australia, in August 2015. The Army's Pathways initiative lets Soldiers train with their regional counterparts and provides U.S. leaders with additional resources for responding to crises in the Pacific. (U.S. Army photo by SPC Jordan Talbot, 55th Combat Camera)

MISSION COMPLETE
Strykers and other vehicles are ready to be driven off train cars at Fort Wainwright, Alaska, in December 2015. The return of the vehicles signaled the end of the 2015 Pacific Pathways mission in Japan and Korea. Pathways missions in 2016 focus on the Philippines, Thailand, Indonesia, Korea and Malaysia. (Photo by SGT Corey Confer, 1st Stryker Brigade Combat Team, 25th Infantry Division Public Affairs)

Learning from and improving on the Pathways deployments will ensure that future iterations will provide greater value for the military specifically, and the United States more broadly. Army forces continue to build security and stability with allies and partners throughout the Indo-Asia-Pacific region. The Pathways initiative represents an opportunity for the U.S. military to achieve that objective more efficiently and more effectively than it has in the past, while providing a greater array of options in a massive region.

Note: *BG Ryan is a senior logistics expert in the Army with 28 years of national security experience around the world. The opinions expressed here are his alone, and do not necessarily reflect the views of the Army, DOD or the U.S. government.*

For more information, go to ***www.army.mil/usarpac****.*

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SPOTLIGHT:

MS. MONICA WALKER

A 'true bean counter' takes a stand

MS. MONICA WALKER

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Product Manager Power Projection Enablers, Information Infrastructure – Communications and Capabilities, Program Executive Office for Enterprise Information Systems

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DAWIA CERTIFICATIONS:
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You know that line about how you have to stand for something or you'll fall for anything? Monica Walker has found her joy standing firm for the principle that the Army can supply Soldiers with the best information technology (IT) equipment without spending a fortune. She relishes her role as a steward of taxpayer dollars. "In this position you have to be slightly aggressive, because you're always being pushed or guided in a particular direction, so you have to figure out quickly what's right and then take that stand."

Besides, she noted, "I'm a she-woman playing in a he-man's world," working in Army IT.

"Not that I've had any bad experiences where people go, 'Oh, you're a woman,' " she hastened to add. "But there are few people at the table in a dress, usually, and that was an adjustment. Early on, I let that get in the way of my development, but now I know my job, and I love it, and I'm here to stay."

What do you do, and why is it important to the Army or the warfighter?

I manage cost, schedule and performance for IT projects in Southwest Asia. This includes everything from requirements development to contract closeout. Right now, I'm working on the network modernization project covering CENTCOM [U.S. Central Command] AOR [area of responsibility], which includes Afghanistan, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Pakistan, Qatar, Saudi Arabia, Syria, United Arab Emirates (UAE), and several other countries. However, I have only traveled to Kuwait, Qatar and UAE. In the past, I've worked on inside-plant and outside-plant videoconferencing between Afghanistan and Kuwait. I travel quite a bit for this position. I'm just back from a two-week trip to Qatar and Kuwait. That was a short trip—I spent the entire summer there a few years ago, and last fall I spent 30 days in Kuwait.

My position provides the most current and technologically advanced means of communications to Soldiers, enabling their units to operate on a robust information-centric platform to carry out missions on behalf of U.S. national security interests.

How did you become part of the Army Acquisition Workforce, and why?

I joined the Army at 18 and was on active duty for four years, until 2003. I became an admin specialist at Fort Bliss, Texas, which led me to get my bachelor's degree in HR [human resources]. I didn't stay in HR, but going to school is how I met my first government supervisor. One of my fellow students was a federal employee, a director and also a later-in-life student. She heard me brief a project and asked if I was looking

for a job—so I got my first federal job, as a protocol clerk, then a protocol specialist for about five years, at the U.S. Army Air Defense Artillery Center at Fort Bliss. That was really cool. I got to meet a lot of heads of state and dignitaries.

In 2010 I came to the National Capital Region with my husband, who's now retired from the Army, from Fort Bliss. The Program Executive Office for Enterprise Information Systems (PEO EIS) initially hired me as an executive assistant, but about eight months in, I completed my MBA and the chief information officer of PEO EIS asked if I'd be interested in being an integrated project team lead in Product Manager Power Projection Enablers (PM P2E). Of course I said yes, and I was reassigned to PM P2E in July 2011. I shadowed the assistant product manager, who was working on a network operations refresh, and then he left, so I got to finish his project. And when that was done, PM P2E sent me to Southwest Asia. Really, I was just sitting in the right place every time.

What's one thing most people wouldn't know about your job?

I equate it to the movie "Inside Out," which takes place inside kids' heads and all the emotions are portrayed as characters. My job is definitely an emotional roller coaster. One moment you're up, one moment you're down, the next moment you're the "anger" character. We never know what's going to happen on any given day. You can come in and a contract got awarded: greatest day ever. Or you can come in and somebody cut a cable on one of your job sites and it took down somebody's network. You just never know.

What do you see as the most important points in your career with the acquisition workforce, and why?

The first time I went to Southwest Asia—that's when I knew I was in the right position. I got to see the capabilities my office puts out being used in the field: Wow, is that cool.

Also, any training is good—even just going to conferences, I'm thinking, "Oh boy, what am I going to learn?"—but two stand out: the CES [Civilian Education System] class at Fort Leavenworth, Kansas, and the capstone for Level III certification. Before I took the CES class, I probably was a person who checked the box for "does not work well with others," so getting to work on that in a group setting was very helpful. In PM P2E, we work with a lot of support personnel, and you have to get what you need out of everybody.

I came back from the capstone training as a better employee—I met people who work on ACAT [acquisition category] I programs or who work in research and development. In our corner of the acquisition world, we're fielding COTS [commercial off-the-shelf] products, so we're not developing or making anything, and we don't necessarily see all the parts of the acquisition life cycle. Meeting people from all around the acquisition world was key.

Can you name a particular mentor or mentors who helped you in your career? How did they help you?

It would be impossible to name a single mentor. Many have coached, trained and mentored me over the years, professionally and personally. A former supervisor in 2004 advised me to seek a career in acquisition before I even knew what the Army Acquisition Corps was. It's almost like she had a crystal ball to look into my future and see that one day I would land here. I got my MBA at a former supervisor's urging. She said, "You're a smart girl, you should go get your master's degree." And I listened. I've been very fortunate. After breaking into the field, I received a lot of guidance on how to become a great project leader. Lastly, a mentor told me to never do anything that is illegal, immoral or unethical, and that is what I live by daily.

What's the greatest satisfaction you have in being a part of the Army Acquisition Workforce?

Apart from knowing that the Solider is using the capabilities that I have delivered to keep us safe, I love that I get to come to work and have an opinion and take a stance. I wear the hat of my job title but I also wear the hat of being the guardian of the taxpayers' dollars, and I love to argue. This position lets me argue with vendors, customers and contractors—and sometimes with internal leadership, even—because while we want to get the warfighters what they need, it doesn't have to cost an exorbitant amount of money.

In a previous life, I must have been a true bean counter. I love what I do. When you're little, your parents tell you that you have to stand for something, and this is a chance to do that. Soldiers get what they need and they're happy, and the government is happy because we didn't spend all their money to do so.

What advice would you give to someone who aspires to a career or position like yours?

Knowledge is power, and practice makes progress. Never be afraid to tackle the hard assignments, and be accepting of change: a career in acquisition is very dynamic. Lastly, be flexible and compromising.

—MS. MARY KATE AYLWARD

BRAIN TRUST

Larry Muzzelo, left, deputy to the CECOM CG, and Gary Martin, PEO for PEO C3T. The two recently talked at length about various aspects of the future of sustainment and the partnership of their organizations. (Photo by Nancy Jones-Bonbrest, PEO C3T Public Affairs)

MOVING FORWARD TOGETHER

Combat and tactical vehicles integrated with WIN-T Increment 2 provide satellite and line-of-sight mobile communications and situational awareness. CECOM and PEO C3T recently teamed on a review of commercial software licenses for the system with an eye to buying licenses collectively, an effort that could yield more than $200 million in savings for WIN-T Increment 2 over the 20-plus years of the program. (Photo by Amy Walker, PEO C3T Public Affairs)

SHARED *VISION*

Leaders of PEO C3T and CECOM discuss how, by synchronizing efforts across differing missions, Army partnerships can make sustainment more effective and support the best possible solutions for the warfighter.

by Ms. Nancy Jones-Bonbrest

Advances in communications, networking and computing technology present unprecedented opportunities to provide Soldiers with capabilities that deliver technical overmatch on the battlefield—such as software-defined radios, expeditionary satellite communications and mission command applications. Advances such as these also inspire new approaches to developing, delivering and ultimately sustaining capabilities. Sustainment, after all, accounts for nearly three-quarters of the lifetime costs for a weapon system.

New approaches to sustainment mean new partnerships and better use of existing alliances. In fact, Army organizations across the acquisition and sustainment communities are using these partnerships to meet the challenge of equipping the next-generation Soldier.

Case in point: The Program Executive Office for Command, Control and Communications – Tactical (PEO C3T), which fields the Army's tactical network, and the U.S. Army Communications-Electronics Command (CECOM), a subordinate command of U.S. Army Materiel Command (AMC) that provides, integrates and sustains command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) system readiness, have partnered on initiatives that span licensing, training and software assurance.

In a joint interview conducted on Dec. 23, 2015, at Aberdeen Proving Ground (APG), Maryland, Gary Martin, program executive officer for PEO C3T, and Larry M. Muzzelo, deputy to the commanding general (CG) for CECOM, discussed these

FOCUS ON FIELD SUPPORT

The new field support concept for network and mission command systems embraces Soldiers as the first line of defense for troubleshooting, backed by a construct of multifunctional support. Field support is one of the key issues that PEO C3T and CECOM have joined forces to address in their search for efficiencies. (U.S. Army photo by Vanessa Flores, ASA(ALT) System of Systems Engineering and Integration Directorate)

efforts and other Army sustainment initiatives both current and planned.

Jones-Bonbrest: Army sustainment means different things to different people. What does it mean to you?

Martin: Simply stated, sustainment ensures that all of the efforts associated with the equipment we provide to Soldiers in times of peace and conflict—training, operation, maintenance and support—are considered. The traditional efforts required to build a sustainment capability are currently being challenged as we focus on incorporating more commercially developed technologies than ever before. These often involve rapid technology evolution and increasingly rapid rates of obsolescence. Rapid change in technology does cause us to revisit the way we deliver training, repair and spares support for these systems.

Muzzelo: I would agree with that. After equipment fielding has been completed, these systems come into the life-cycle management commands, which have responsibilities to support the program offices in ensuring that the systems remain operationally supportable. As Gary mentioned, in our domain we use a lot of commercial off-the-shelf (COTS) equipment integrated into these weapon systems. As a consumer, you might throw out an old phone, but the Army isn't going to throw things out, so we need to make sure they continue to operate as intended. We make sure the software is working, the parts are available for repair, the Soldiers understand how to use systems—and, as new Soldiers transition into units, we make sure training is provided to potential new users.

Martin: But the Army has a unique challenge when it comes to sustainment that many of the other services don't: We generally have significantly larger quantities and varieties of systems as the result of mission and organizational constructs. Although the Army is getting smaller, we still have the responsibility to modernize the Army, Army Reserve and National Guard units. We can't afford to equip the entire force overnight, so it generally takes many, many years to fully field a new system. Consequently, without sustainment, the technology can become obsolete before you can get to the end of fielding. So, as a result of the time it takes to field the entire force and the rate of technology advancement, we often have many different versions and variations of systems. That's true of software as well as hardware.

For example, since the late 1990s we have fielded our situational awareness and friendly force tracking system, Force XXI Battle Command Brigade and Below (FBCB2). An important part of our command and control, FBCB2 is currently on more than 100,000 platforms and found in every brigade combat team in the Army. Upgrading this system is a massive process. We had to field the upgrade in increments due to resourcing and maturation of technology, starting with Joint Capabilities Release and now turning to the newest iteration known as Joint Battle Command – Platform (JBC-P).

With the upgrade come significant features and a greatly increased density of systems within each unit—all things the next-generation Soldier expects—but it also takes time. So we have to prioritize and field in accordance with available resources to make the most of

the capability and get it into the hands of our Soldiers as quickly as possible.

Jones-Bonbrest: So how important, then, is the partnership between the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)) community and the sustainment community?

Muzzelo: From my perspective, it's extremely important. Systems are in the field for several years. So, as sustainment strategies are developed, we look at who are the vendors, are we buying data rights, is it sole-source, are there commercial products integrated in that capability, and what are the strategy and cost for that capability over the long term. If the sustainment and life-cycle management communities aren't talking, you'll have many challenges and obstacles in developing the strategy and then implementing it. On the sustainment side, in support of the program offices, we're responsible for sustaining systems for many years. So if we're not in sync, that leads to serious organizational and programatic challenges, and at the end of the day it really impacts our ability to provide the best support to Soldiers.

Martin: The fact of the matter is that decisions made by project managers [PMs] early in the program can significantly impact what happens on the back end. With approximately 70 percent or more of the costs for a weapon system over its life being executed on the sustainment side, it is prudent that there is mutual understanding and mutual partnering on the front end. A decoupling there can result in significant inefficiencies and costs. We're seeing that today, and it is the essence of the partnership that exists between AMC on the sustainment side and ASA(ALT) on the acquisition side. It's critical. The better the partnership and engagement throughout the entire program life cycle, the more effective the program will be.

Muzzelo: I would also add that in sustainment, we are never funded to the full amount we need. So if the PM implements strategies to be as cost-efficient as possible on the acquisition side, that also comes into play when we're sustaining the systems. We have many competing priorities, sometimes within different PMs that are in the same PEO, so that partnership and prioritization can only be successful if there's a relationship and conversation between both organizations.

Jones-Bonbrest: Can you give examples of this partnership that are already in place?

Martin: There really are four issues that we have selected locally as opportunities to partner. Each addresses a couple of areas where we have seen a need for improved efficiencies. They include security patching, software assurance, software licensing and field support.

Muzzelo: Security patching is a good place to start. I mentioned that we use a lot of COTS products, at least in PEO C3T's domain of weapon systems, and there are certain challenges that come with this. For example, Microsoft and Apple have to patch their systems. Most consumers are familiar with that process. The Army faces some of the same challenges. The Army's process historically has been to send out CDs on a quarterly basis with security patches, which requires Soldiers to manually install software from the CD. In today's high-tech environment, that's a nonstarter. So we're working collaboratively with PEO C3T to get the patches integrated, tested and posted to one site where users can download those patches for tactical systems. We've started that initiative with Fort Campbell and Fort Bragg, and we'll go to Germany next. That's a partnership that is beneficial not only to us but also the Soldier, and it really reduces the security risk of our tactical Army networks and systems.

MAKING CONNECTIONS

Networked vehicles provide on-the-move communications, mission command and situational awareness that commanders need to lead from anywhere on the battlefield. PEO C3T and CECOM have different but overlapping responsibilities for the C4ISR system readiness that supports the Army network. (U.S. Army photo by Amy Walker, PEO C3T Public Affairs)

LEARNING INITIATIVE

Soldiers with the 101st Airborne Division (Air Assault) train on mission command applications Jan. 5 at the Fort Campbell, Kentucky, Kinnard Mission Training Complex. PEO C3T and CECOM are working on a home station training initiative with the 101st that would institutionalize network training for operational network signal Soldiers and other users. (Photo by Nancy Jones-Bonbrest, PEO C3T Public Affairs)

Martin: The initiative, a partnership with PEO C3T, CECOM's Software Engineering Center and the U.S. Army Network Enterprise Technology Command, is leveraging the network enterprise centers at post, camp and station as the facilitator for connectivity to download these patches. Each of the efforts has shown we can improve the delivery of patches through automated means. Soldiers are leveraging this to reduce the fairly significant burden a unit would have to undergo to individually patch these systems.

Muzzelo: We now know it's technically feasible. Our challenge will be to implement this on a much larger scale. So it is no longer, "Is this doable or not?" It's, "How do I scale this for the entire Army?"

Muzzelo: If you look at the systems we have in sustainment, we're really seeing an exponential growth in software. A decade ago, we had a couple systems in sustainment. Now we're up to the point where in the next few years, we'll have 120 or 130 different individual programs of record and 300,000-plus individual platforms. So you're not at the point anymore where you can do a manual inspection of code and ascertain if that code is of quality, of sufficient reliability and security. We are at the point where we must use automated tools to do the analysis for us and understand if there are vulnerabilities in that code as early in the process as possible. So we started an initiative to use a suite of automated tools to give us results that we can then go back and provide to the developers to modify or reprogram the code.

Martin: Right, and I suspect there will be some side benefits as well. Although PMs execute and deliver individual systems, they all must operate together to effectively deliver mission command and networking capabilities. The greatest challenge in this portfolio is the integration of these systems into a system-of-systems solution. I believe that rigor in our software assurance process, particularly if you start from the beginning of the development process, will pay dividends in terms of reducing the integration risk down the road.

Martin: Another initiative is buying things collectively to ensure that we as a community are more effective. We mentioned the reliance on commercial items; well, one of the biggest costs in sustainment, particularly on our software-intensive systems, is the procurement of licenses for these commercial products where we do not own the intellectual property or source code. We must pay annual lease fees in order to get the vendors to provide security patches and the other things you need to maintain the appropriate level of cyber defense for these systems. License fees across the C4ISR portfolio cost over $100 million each year. Often similar commercial software products (such as Microsoft, Cisco, Oracle, etc.) are used on multiple programs. We can achieve significant cost reductions if we procure these licenses collectively under enterprise license agreements [ELAs].

Muzzelo: We are targeting a few specific products. This includes working to put in place an ELA that both organizations can buy from. Specifically, we're looking at one for the PEO C3T community, one on the PEO for Intelligence, Electronic Warfare & Sensors (IEW&S) side, and then something jointly that would satisfy the needs of both IEW&S and C3T as well as CECOM. That effort is underway.

Martin: A few years ago, we started to do reviews on programs of record to look at which software licenses are required for procurement and delivery, and how many

of those same products are required for sustainment. In many cases we found that we did not have an integrated enterprise approach to buying licenses. As a recent example, Larry's team and the project manager for Warfighter Information Network – Tactical Increment 2 (WIN-T Inc 2) took a look at licenses for commercial software within the WIN-T system and how we can buy those licenses as a collective team to leverage that same enterprise contract. We are projecting more than $200 million in savings for WIN-T Inc 2 over the 20-plus years of the program. Now we'll start to go through other high-priority programs and bring in PEO IEW&S, also located at APG, because they use a lot of the same COTS software applications that we use.

Martin: For the past 10 to 14 years, Soldiers have relied extensively on contractor support and field technical assistant teams. CECOM, PEO C3T and PEO IEW&S conducted an analysis of field support technical assistance across our programs. By assessing trouble tickets entered by units during their combat training center rotations, we uncovered patterns and trends highlighting opportunities for technical assistance right-sizing as well as areas where units were struggling with gaining proficiency in systems operations and maintenance. This insight has resulted in a number of actions, including improvements to system initialization and configuration steps and processes to reduce the Soldier burden.

We are now working to assess options for working collectively to improve the availability and delivery of home station training. There are a number of challenges associated with this, including the availability of time to conduct new equipment training (NET), rotation of Soldiers shortly after NET has concluded and the volume of new systems being fielded collectively under capability set fielding, etc. MG [Bruce T.] Crawford (CG, CECOM), BG [Mitchell L.] Kilo (U.S. Army Forces Command G-6), BG [Thomas A.] Pugh (CG, U.S. Army Signal School) and I are working together to assess ways to synchronize training efforts at the Signal School, in new equipment training, at the mission command training centers and at the signal universities to better support the units and improve sustainment training. As we reshape training, part of that same process is rebalancing the technical assistance. That's a delicate balance.

Muzzelo: We already started re-evaluating the training packages we have and are leveraging the mission command training centers and signal universities for sustainment training on the systems. Often the field tech assistance providers are not part of NET, and the training centers and universities don't have the latest equipment and software, so they can't build the technical competence to conduct the sustainment training for these new systems we're fielding.

Martin: In January, PEO C3T and CECOM began a phased implementation of a new home station training initiative with the 101st Airborne Division that will help determine the skill gaps and how do we train for those better. We're excited to see the results as this moves forward.

Jones-Bonbrest: What's on the agenda when it comes to the future of sustainment?

Martin: One of the efforts we are going to take as a challenge for this coming year is to take a more critical look at ways to reintroduce competition as we buy our sustainment services. We have a real challenge in this community with the pace of obsolescence and the proprietary nature of the technologies we buy. We have started a conversation about assessing our highest-cost programs in sustainment and are looking for innovative ways to reintroduce competition.

Muzzelo: For example, we might buy a warranty that is good for three or five years, and then the system gets transitioned to sustainment. We're looking at why we can't put something on the contract for another five-year warranty that I can exercise at the point when the system comes into sustainment. Is there a way of getting a better deal? Another concept we are pursuing is to buy licenses in perpetuity when the system is contracted for and in a competitive environment when there may be a willingness to give the Army a better deal if we ask the question.

Martin: Right, and if you really look at Better Buying Power, the basic principle is being smarter about how we do business. The ways we incentivize our industry partners—driving competition, being smarter buyers—are what we are looking to do. When it comes to sustainment, these objectives are much more achievable if we work together. The real gains will come from early and persistent engagement by both the PEO and AMC community throughout the entire program life cycle.

For more information, visit ***http://www.cecom.army.mil/organizations.html*** *or* ***http://peoc3t.army.mil/c3t/****.*

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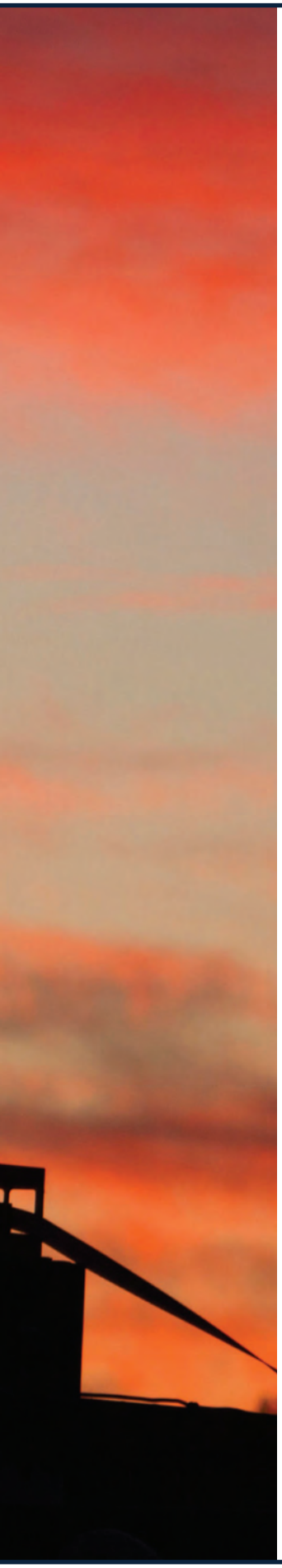
READY TO RECEIVE
A Soldier from the 3rd Combat Aviation Brigade (CAB) installs radio communication equipment as the sun sets over Fort Stewart, Georgia, in January. More than 200 different Army systems require PNT data, making the A-PNT program a major priority and critical enabler for the U.S. Army Operating Concept, "Win in a Complex World." Pseudolites are the most advanced of the four A-PNT subprograms. (Photo by SPC Scott Lindblom, 3rd CAB Public Affairs)



BEYOND GPS

Pseudolites help pave the Army's path to assured positioning, navigation and timing, providing a 'protective bubble' for Soldiers when satellite signals are degraded or denied.

by MAJ Troy Houston

If your personal GPS is wrong, the consequences can be maddening. If a Soldier's GPS is wrong, the consequences can be disastrous. GPS has become so integral to daily life, and to military operations, that it's easy to take for granted. But when GPS satellite signals are impeded or denied in a combat environment—by terrain conditions or enemy actions—it affects units' ability to maintain initiative, coordinate movements, target fires and communicate on-the-move.

As the threat environment changes and adversaries become more sophisticated in attacking existing GPS capabilities, Army senior leaders have stressed the need to achieve assured positioning, navigation and timing (PNT) information by other means. With more than 200 different Army systems that require PNT data, the Army is DOD's largest user of PNT.

So what does it mean to have assured PNT, and how can the Army Acquisition Corps deliver the capability quickly and affordably to the battlefield? The Pseudolite program—short for "pseudo-satellite"—provides a glimpse.

DATA SOLDIERS CAN TRUST

Having accurate PNT information is mission-critical in all environments, but it becomes especially important in environments where adversaries are using anti-access and area-denial (A2AD) capabilities to try to deny our forces freedom of movement and freedom of action.

To deliver data that Soldiers can trust even amid these challenges, assured PNT (A-PNT) has two components:

- Integrity: the right signal.
- Assurance: a trusted connection to accurate PNT information.

Integrity describes the reliability of the PNT information received on a GPS device. It answers the questions: Does the signal contain the data the receiver expects? Does the signal come from an authorized and trusted source?

Assurance, meanwhile, measures the accuracy of the PNT information received on a GPS device. It answers the questions: Does the GPS receiver provide an accurate PNT solution? Does the GPS receiver have an active link to a PNT source?

Together, integrity and assurance of the GPS signal minimize operational risk and collateral damage, and maximize the probability of mission success.

The Army is seeking to provide this capability through the A-PNT program, which senior leaders describe as a major priority and critical enabler for the U.S. Army Operating Concept, "Win in a Complex World." A-PNT comprises four subprograms—Pseudolites, Mounted PNT, Dismounted PNT and Anti-Jam Antennas—that will work together to augment GPS and provide PNT information that Soldiers can trust.

A BETTER PATH TO A-PNT

U.S. Army Reserve combat engineers from the 374th Engineer Company (Sapper) program their grid coordinates using a Defense Advanced GPS receiver, on a team-based land navigation course in August 2015 during the Sapper Stakes competition at Fort Chaffee, Arkansas. The Pseudolite program is a response to the vulnerability of GPS as the threat environment changes and adversaries become more sophisticated in attacking existing GPS capabilities. (U.S. Army photo by MSG Michel Sauret, 200th Military Police Command)

THE PSEUDOLITE SOLUTION

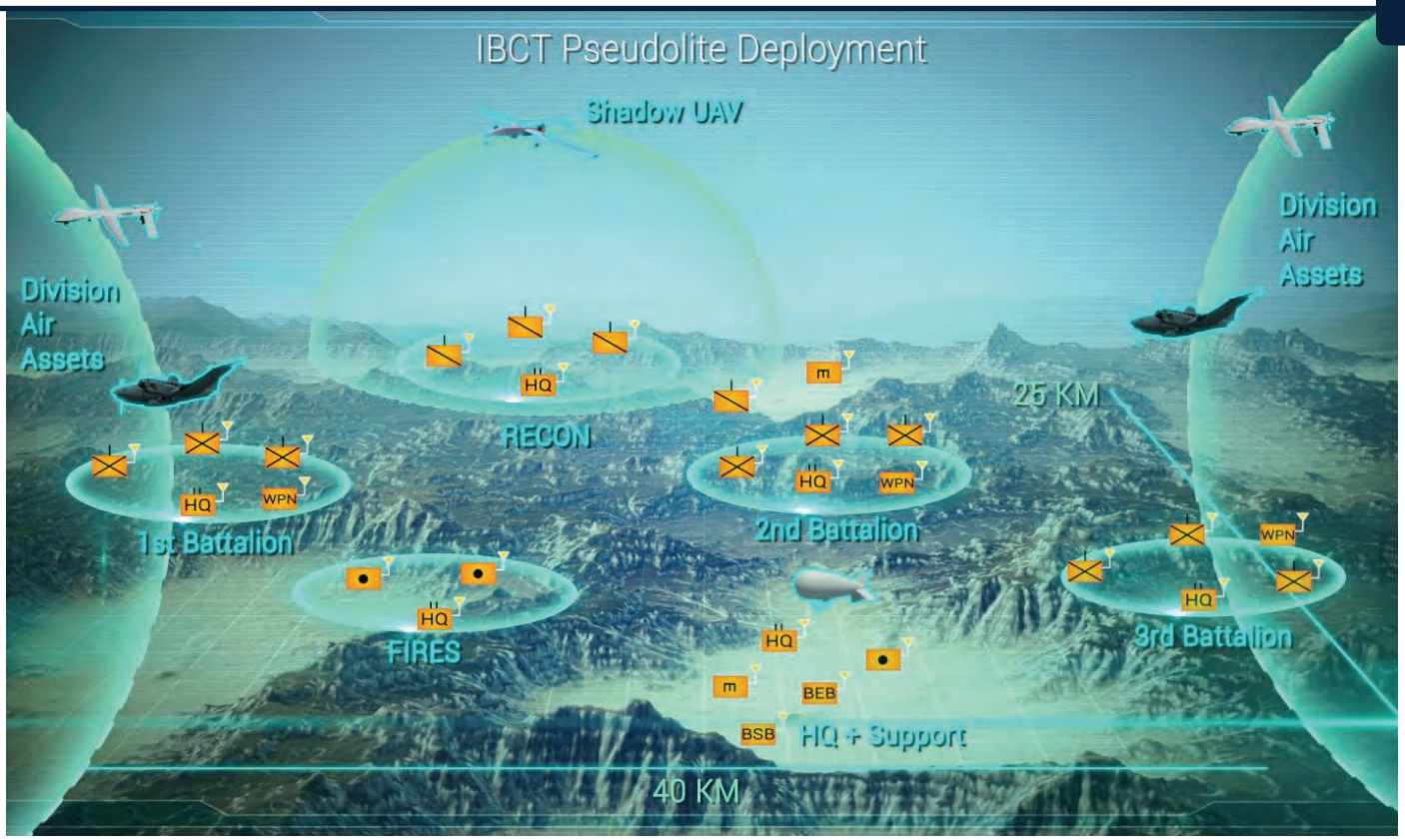
The A-PNT program of record is in its early stages, with the Army science and technology community transitioning solutions and requirements being developed. The most advanced of the subprograms to date is Pseudolites—pseudo-satellites that can pinch-hit for the GPS satellite constellation when needed for operations at brigade-and-below.

Deployed on both unmanned aerial vehicles and ground vehicle platforms, pseudolite transmitters in effect "pull down" the GPS satellite constellation closer to the ground—delivering users a high-power signal that's more difficult to exploit or deny in A2AD or geographically difficult environments. By leveraging advances in commercial technology and by taking an accelerated, competitive acquisition approach, the Pseudolite program is progressing on schedule through the milestone process in pursuit of its ultimate goal: provide PNT information independent from GPS.

As a component of the A-PNT architecture in the brigade combat team (BCT), pseudolites augment GPS by providing PNT data to users within a protected area. Using terrestrial- or near-terrestrial-based transmitters as an alternative source of GPS-like signals, pseudolites create a sort of protective bubble for the BCT. The bubble activates when access to the GPS satellite signal is degraded by either friendly or enemy electronic transmission or by natural obstacles such as canyons, urban areas or heavy foliage.

Pseudolites consist of an Anti-Jam Antenna System (AJAS), non-GPS augmentation, GPS receiver, transmitter, and a command and control application. Each pseudolite will use the AJAS to maintain connection to the GPS constellation for as long as possible. Non-GPS augmentation will then step in to provide additional information to the final PNT solution. The pseudolite transceiver will receive and process command, configuration and synchronization data from existing computing and communications equipment within the BCT, and rebroadcast a high-powered GPS-like signal that is recognized and processed by the military GPS receivers within the area of operations.

The planned implementation for pseudolites is at the BCT level, enabling a sufficient level of command and control as well as the ability to react rapidly to changes in the operational environment. To enable A-PNT coverage for the BCT, pseudolites will be integrated onto select ground and aerial platforms within the unit that offer the proximity and availability to provide direct support



THE BIG PICTURE
Pseudolites are to be fielded at the BCT level—as shown here using an infantry BCT (IBCT) as an example—allowing for sufficient command and control as well as enabling rapid response to changes in the operational environment. Deployed on unmanned aerial vehicles (UAVs) and ground vehicle platforms, pseudolite transmitters in effect pull the GPS satellite constellation closer to the ground, delivering a high-power signal that is harder to exploit or deny in A2AD or geographically difficult environments. (SOURCE: PM PNT)

to maneuver battalion operations. Pseudolites will be fielded as modular, lightweight, self-contained systems compatible for use with aerial platforms, fixed or semifixed structures, antenna masts, towers or aerostats available to the BCT.

Given the prevalence of GPS in today's formations, these systems will not be fielded in a vacuum, but instead as part of a "tool kit" that leverages current equipment for maximum effectiveness. Users will control pseudolites through application software on existing network and spectrum management tools within the BCT. Current Military GPS User Equipment (MGUE) devices will receive updates allowing them to use pseudolites as a PNT source, while future MGUE devices will be designed to receive and process the pseudolite signal. As the Army phases in the capability, the pseudolite signal will not cause any harmful effects to user equipment that has not been or cannot be updated.

To further streamline their integration into the force, pseudolites employ an open systems architecture design, aligned with the Sensor Computing Environment baseline as part of the Army's Common Operating Environment. This modular approach provides the flexibility to integrate various software, hardware and human components designed to satisfy A-PNT. Over time, it will allow the Army to implement software upgrades and modifications to enhance A-PNT, enabling continuous innovation and evolution while minimizing the impact to existing equipment.

A CROSSCUTTING CAPABILITY

With PNT data used in Army systems as diverse as the Stryker, Nett Warrior, Rifleman Radio and the M777 howitzer, A-PNT is a capability that crosses multiple acquisition portfolios. As its different components are developed and fielded, almost every program executive office (PEO) in the Army will have at least one project manager in need of A-PNT.

Formally recognizing the criticality of A-PNT and the need for coordination across and beyond the Army, the assistant secretary of the Army for acquisition, logistics and technology

MULTISYSTEM SUPPORT
An M777 howitzer crew assigned to the 2nd Battalion of the 17th Field Artillery Regiment, 2nd Stryker Brigade Combat Team, 2nd Infantry Division (2-2 SBCT) loads a 155 mm round in preparation for firing during the unit's Division Artillery Readiness Test in October 2015 at Yakima Training Center, Washington. PNT data is used in Army systems as diverse as the M777, Stryker, Nett Warrior and Rifleman Radio, requiring an enterprise approach to assured PNT. (U.S. Army photo by CPT Meredith Mathis, 2-2 SBCT)

(ASA(ALT)) recently streamlined the A-PNT acquisition process by designating the PNT program office as a direct reporting program manager to the ASA(ALT). This designation enables a faster decision cycle, resulting in the delivery of enhanced capabilities to the Soldier in a compressed timeline.

Managing the program through ASA(ALT) allows the Army to address broader projects and initiatives, such as the Army PNT System of Systems Architecture, that will enable an enterprise approach to assured PNT and prevent an uncoordinated approach by programs with redundant solutions. The structure also enables Program Manager (PM) PNT to plan for the cross-PEO integration efforts required to outpace threats and increase efficiencies in PNT implementation.

Against this backdrop, pseudolites were the first of the family of A-PNT systems to receive a milestone (MS) decision. In May 2015, the subprogram received an MS A decision to enter into the technology maturation and risk reduction phase. PM PNT is now leveraging industry expertise in GPS and GPS alternatives through competitive prototyping. Each company is charged with delivering pseudolite prototypes and laboratory testing. This lab testing will provide the government with data to assess the capability of the prototypes up to Technology Readiness Level 6 in preparation for an MS B review.

CONCLUSION

While we think of GPS as the gold standard, it is simply one materiel solution to deliver PNT. As the technology and threat landscape continue to shift, the A-PNT program is breaking ground with several alternative means to provide trusted PNT data to Soldiers.

As the first A-PNT element "out of the gate," the Pseudolite program is using an accelerated acquisition approach to deliver modular, scalable technology that is flexible to BCT commanders' needs, integrates with current equipment and can smoothly incorporate future evolutions in antennas, receivers and other technology. Each step in the process takes us closer to the ultimate vision for a pseudolite: a Soldier can turn it on, and the pseudolite will be able to determine its PNT anywhere in the world, without the aid of the GPS constellation, and be totally transparent to the user.

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

MAJ TROY HOUSTON is the assistant product manager for pseudolites, part of the Army's A-PNT program. He holds an MBA and a B.S. in finance from Illinois State University. He is Level II certified in program management.

REACHING FOR THE CLOUD

As ubiquitous as 'the cloud' is in the commercial world, that is not the case with the Army because of security requirements. But an Army cloud is not far away and offers significant benefits for sustainment and cost-savings—and the information Soldiers need.

by COL John E. Rozsnyai

The keys to sound decision-making and effective action are good information—perhaps with a few specialized tools and services thrown in to help make sense of it all—and reliable communications. This is true no matter where you are or what you are doing—on the battlefield or in the office, conducting major combat operations, responding to a humanitarian crisis, training or planning.

Today, communications, the collection, delivery and sharing of information, and the applications that help us use and understand the information have a common denominator: They are network-dependent, and the demand for them is high and constantly increasing. At the same time, the scope and diversity of Army mission requirements are growing, budgets and staff levels are declining, and cybersecurity threats and attacks are becoming more sophisticated and more frequent.

This environment challenges the Army's ability to maintain readiness and warfighting superiority. Innovative approaches that preserve resources and the Army's technological edge, while fulfilling readiness requirements, are the solution. Cloud computing provides just such a transformational opportunity.

Delivering the enablers that warfighters and decision-makers need through traditional information technology (IT) infrastructure is inherently less secure and has become far too expensive to sustain. Cloud computing, however, offers an avenue to significantly improve the Army's overall cybersecurity posture, lower IT hardware and software costs and provide the flexibility to develop and deliver more quickly the capability enhancements the force needs.

WHAT CLOUD COMPUTING IS NOT

Cloud computing is not merely a data center that has been optimized for performance and efficiency. Even the most optimized data center still requires significant management to operate, secure, sustain and provision computing resources (e.g., processing, memory, storage). In a standard data center, computing resources are dedicated to specific system and application owners (one computer is assigned to run only one application) based on predicted peak levels of demand, which often exceed actual need. This is known as over-provisioning, and these resources are rendered unavailable to other systems—whether or not they actually are being consumed—and the system owner pays to sustain them even when they're not being used.

WHAT CLOUD COMPUTING IS

In contrast, cloud computing encompasses all of the efficient features of an optimized data center while adding five essential characteristics:

1. On-demand self-service, where system and application owners can provision, and de-provision, available computing resources without data center management intervention.
2. Broad network access to support multiple types of devices.
3. Shared pooling of configurable computing resources, which can be released for other uses when demand is low.
4. Rapid elasticity, which enables automatic scaling of resources up or down of resources based on actual demand.
5. Measured services through a metering capability, which ensures that system and application owners pay only for the resources they consume.

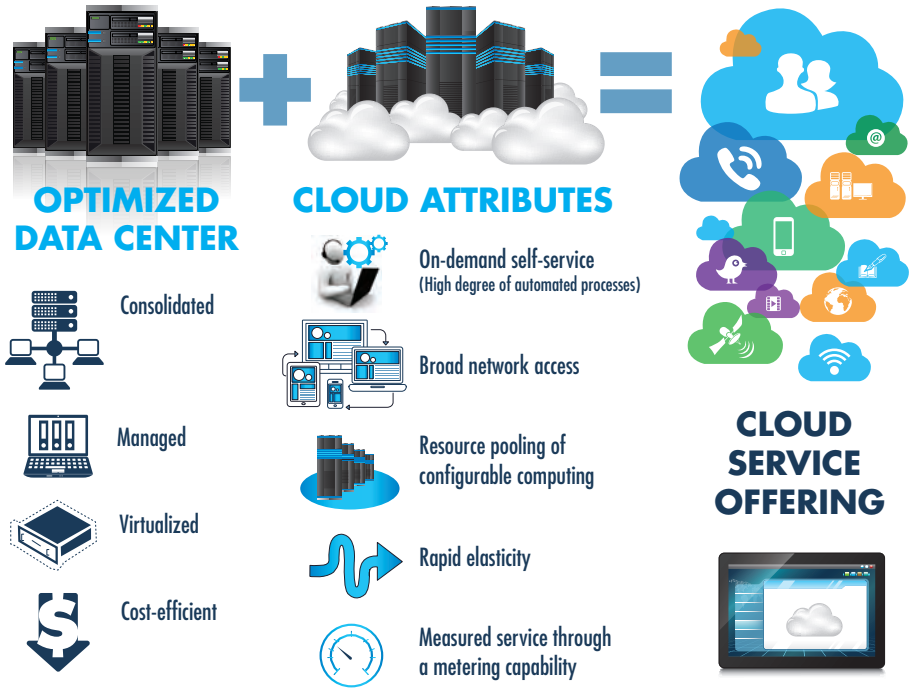
CLOUD SERVICE MODELS

In general, cloud computing provides capabilities through three service models, which can be deployed on- or off-premises in a private, community, public or hybrid environment, depending on the level of security required:

Software as a Service (SaaS): The cloud service provider (CSP) operates, secures and sustains all of the computing infrastructure, including servers, operating systems (platforms) and applications (software). SaaS is a complete service offering that requires very little intervention beyond the CSP, with the exception of some minor user-level customization, which may be offered as part of the service.

Platform as a Service (PaaS): The CSP operates, secures and sustains the computing infrastructure, including servers and operating systems. PaaS is a mid-level service offering that requires the application owner to self-provision and sustain all services and associated data, including cybersecurity updates and incident response.

Infrastructure as a Service (IaaS): The CSP operates, secures and sustains only the hardware. IaaS is the minimum-level offering. It requires system and application owners to self-provision and secure the entire operating environment, including the operating system, application services and associated data, and to provide the required cybersecurity updates and incident response.



THE POWER OF CLOUD COMPUTING

Cloud computing adds five distinct advantages to the best features of data center computing. Resources can be shared between programs and used as needed—an improvement on the over-provisioning that occurs with data centers. (SOURCE: CIO/G-6 and Microsoft)

BENEFITS TO THE ARMY

Today's data center environment, with more than 1,000 locations, is cost-prohibitive to sustain and nearly impossible to secure because of the vast cyberattack surface and inconsistent, untimely cybersecurity practices. This target-rich environment prevents the Army from adequately protecting its information resources and fully exploiting economies of scale. It also prevents the Army from keeping pace with emerging technology and setting conditions to harness the power of "big data" analytics—working with data sets so large or complex that traditional data processing applications are inadequate.

Cloud computing upends this paradigm. When the appropriate cloud service model is used, the Army reaps a slew of benefits. Application owners no longer acquire specific, dedicated computing resources; rather, they contract for these resources as a service from a CSP, which then hosts applications and data in a common, shared computing environment. Overall software licensing costs drop through centralized delivery.

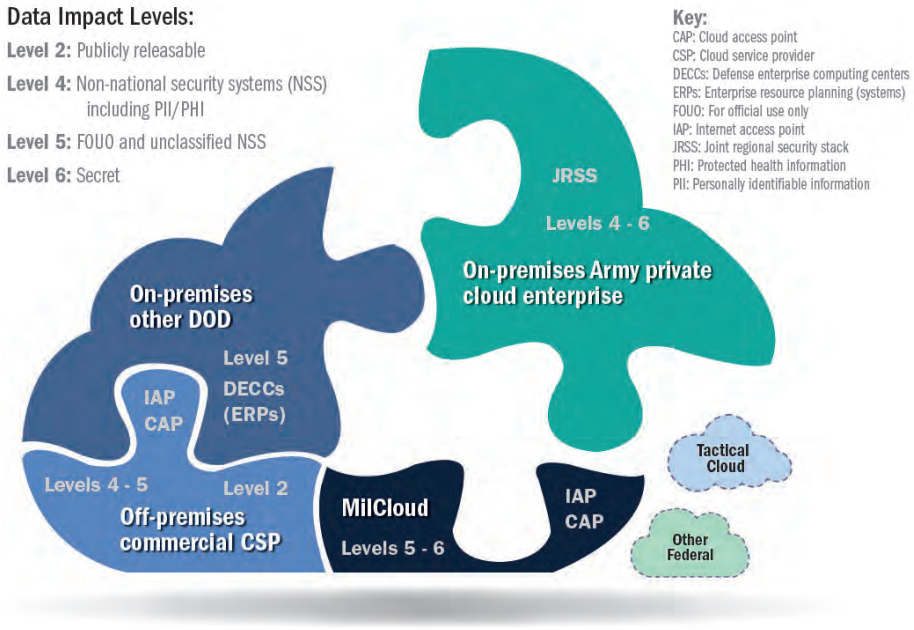
In the aggregate, the Army's cybersecurity posture improves dramatically. Instead of 1,000 or more open connections to the network that must be supported today, DOD intends to have fewer than 85. Additionally, centrally managed and pushed patches for software and operating systems speed the implementation of fixes to "zero day" vulnerabilities (vulnerabilities that the developer is not aware of but a hacker may have found, and therefore the developer has zero days to fix them) and lower hands-on labor requirements.

Additionally, the user experience becomes more consistent and less technically complex, through a common set of applications and consistent end-user device interfaces, which reduces training requirements and costs. And capability enhancements are fielded much faster; with computing infrastructure available to research and development (R&D) communities through on-demand, self-service portals, there is no need to wait on long procurement cycles for R&D to begin enhancing capabilities. The Army also can take advantage of the commercial R&D efforts that can readily be ported from and into the cloud.

WHAT THE ARMY IS DOING

Hybrid cloud: The Army Cloud Computing Strategy encompasses a hybrid deployment model that includes on-premises DOD (for example, milCloud, which is housed in DOD facilities) and commercial CSPs and off-premises federal (such as NASA or the Department of Homeland Security) and commercial CSPs and cloud computing infrastructure in the tactical environment. The Army determines the "best cloud" deployment and service for each application through an engineering evaluation process that considers migration readiness, information security requirements, mission requirements and cloud service provider capabilities.

Off-premises cloud pilots: The Army is leveraging the Defense Information Systems Agency (DISA) cloud pilot program, which uses an off-premises commercial CSP. The pilot is not only evaluating the security capabilities provided by the CSP, but it also is helping to shape the security requirements for DISA-provided cloud access points (CAPs), which provide boundary security for the Department of Defense Information Network. The final CAP architecture is now in place and is



EFFICIENCY AND SECURITY

Each piece of the hybrid cloud puzzle can handle a different level of security to cover each data impact level. Ensuring that cloud resources can support Soldiers deployed to austere, contested environments with limited bandwidth is one challenge to the transition to the cloud. (SOURCE: CIO/G-6)

in the early stages of integrating additional CSPs and DOD applications. The objective is to test their capabilities to increase the pool of potential bidders, and ultimately to accelerate migration of applications to the cloud and closure of data centers. As a follow-on effort, the Army will begin a pilot in FY16 for "common services" (user and device authentication, Active Directory services, scanning and information assurance vulnerability assessment) provided from off-premises CSPs.

On-premises cloud pilot: The Army also is pursuing an on-premises commercially owned, commercially operated (COCO) cloud service offering at Redstone Arsenal, Alabama. A proof of concept, this effort is focused on reducing the risks associated with providing an Armywide, COCO private cloud that accommodates more sensitive information, up to the secret level.

Acquisition vehicles: Although there are acquisition vehicles that can be leveraged now, the Army is adapting to recent lessons learned and changes to the DOD Federal Acquisition Regulations. In November 2015, the Army's Program Executive Office for Enterprise Information Systems (PEO EIS) issued a draft request for proposals to industry to refine requirements for an Army Cloud Computing Enterprise Transformation (ACCENT) contract, to be awarded in FY17. Intended as an enterprisewide cloud acquisition vehicle, ACCENT will provide commercial cloud solutions for eligible Army enterprise applications (email, collaboration, SharePoint—any application used across multiple installations).

CHALLENGES AND THE WAY AHEAD

First, the Army must ensure that it does not compromise its mission by unrealistically trading the confidentiality, integrity and availability of critical data and information in pursuit of the cloud's potential benefits. Because cloud computing within DOD is still evolving, measuring overall security vulnerabilities and other inherent risks is difficult. The Army is significantly changing how it operates the network and we don't necessarily know what we don't yet know. Collectively, all DOD components are working to mitigate the risks that are known, both at DOD's network boundary as well as within CSPs' infrastructure. Additionally, we are evaluating how to

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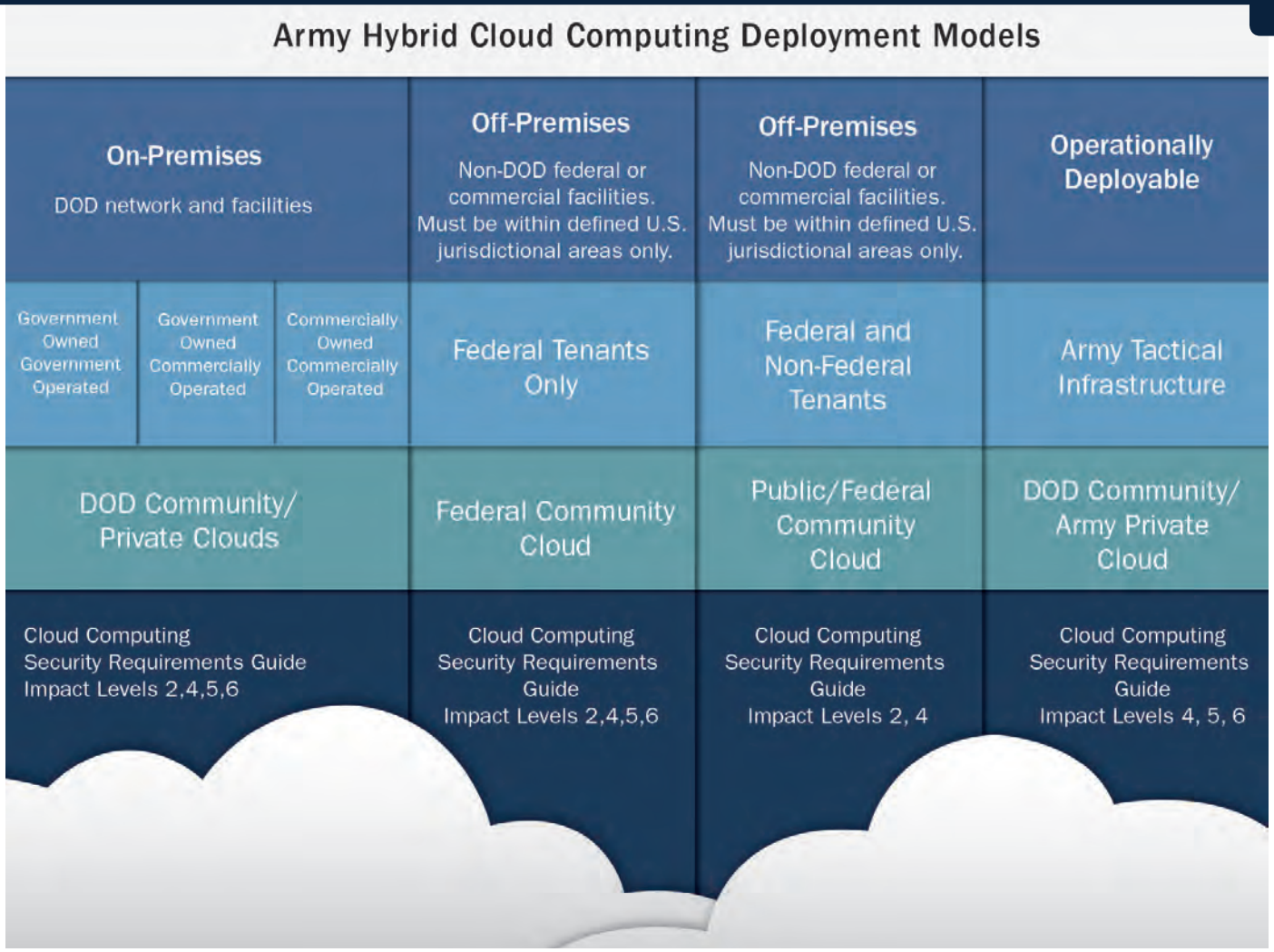


ASSEMBLING THE CLOUD INFRASTRUCTURE
The Army isn't relying on a single kind of CSP. There's a place in the Army IT infrastructure for each different configuration of cloud service—on-premises, off-premises, DOD and commercial. (SOURCE: CIO/G-6)

effectively integrate the use of big data analytics to rapidly mitigate insider and external threats to the network.

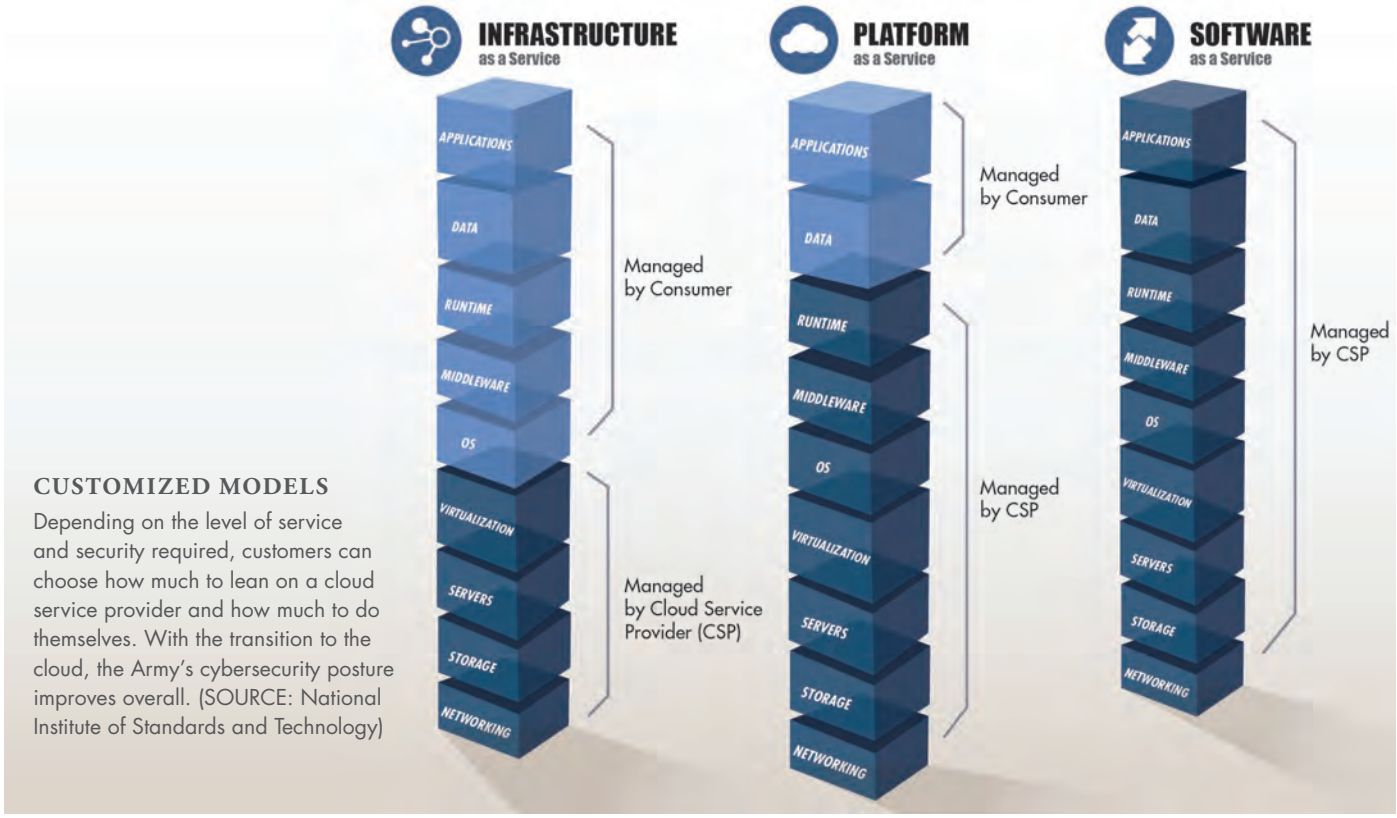
Assured level of communications: One of the biggest challenges is that deployed forces are not assured the level of communications availability and bandwidth to which they are accustomed at home station, which could impact their ability to reach the cloud. The Army must be able to deploy forces far away from its fixed infrastructure, into austere and highly contested environments, where they will have to operate for extended periods of time in disconnected, intermittent and limited communications conditions.

Cultural resistance: Changing mindset is not an easy endeavor for an enterprise as large as the Army. It's hard work convincing organizations and agencies that own and operate their own systems and applications to accept that someone else can provide the same or better level of service at a reduced cost.

Application/data determination: The Army is taking a close look at what types of applications and data elements are the highest risk to the mission and the overall force protection effort. This will determine which must always be available locally in case of disconnection and which lesser-risk elements forces can wait for.

CONCLUSION

While network security, operational efficiency and cost are driving factors in the move to cloud computing, they are not the primary goal. Increasing mission effectiveness is the main



CUSTOMIZED MODELS

Depending on the level of service and security required, customers can choose how much to lean on a cloud service provider and how much to do themselves. With the transition to the cloud, the Army's cybersecurity posture improves overall. (SOURCE: National Institute of Standards and Technology)

objective. Cloud computing will make information and IT services, such as collaboration, communication and analysis tools, available wherever Soldiers and commanders are, whenever they need them. As a result, split-base operations, where certain elements deploy forward and others remain outside the operational theater (and even at home station), will become much easier to execute. With fewer people and less materiel forward, operational sustainment requirements will decrease. At the same time, quicker, more complete collection of data—made readily accessible regardless of the source's or the user's location—and the ability to use big data analytics have the potential to simplify anticipation and fulfillment of the sustainment needs that remain.

Developing a rapidly deployable cloud capability is not an easy endeavor when you start to consider all of the variables. However, it is achievable, and it is imperative for the Army to maintain its warfighting superiority in the 21st century.

For more information on the Army cloud computing strategy, go to ***Army Cloud Computing Strategy, Version 1.0, March 2015****. For more information on Army guidance on the use of and migration to commercial cloud service providers, go to* ***http://ciog6.army.mil/Portals/1/Army_Cloud_Computing_Strategy%20Final_v1_0.pdf****.*

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Cloud computing offers an avenue to significantly improve the Army's overall cybersecurity posture, lower IT hardware and software costs, and provide the flexibility to develop and deliver more quickly the capability enhancements the force needs.

COMMON CAUSE

Tobyhanna Army Depot and PEO C3T develop a strategic partnership to ensure cost-efficient sustainment of vital C4ISR equipment to support an increasingly expeditionary force.

by Mr. Herbert Cottrell, Ms. Katlin Edmunds and Mr. Robert Glowacki

They're often referred to as the Army's Geek Squad.

With the mission to repair, refurbish and perform high-tech adjustments for communications and electronics equipment so it can quickly go back to the field, Tobyhanna Army Depot (TYAD), Pennsylvania, is at the center of logistics support for gear that includes satellite communications, radios, mission command systems, communications security and more.

In an era of increasing requirements, quickly evolving technology and shrinking budgets, a holistic approach to sustaining communications and electronic equipment is not just a nice-to-have, but a necessity. Even as the companies that produce Army systems evolve constantly—merging with other firms, going out of business or moving on to new technology, the Army has to sustain those systems. After all, Army equipment may stay in the field for decades.

TYAD—along with the command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) community it supports—is focusing on a more strategic approach to sustainment for current and future systems. By establishing a standard method of communication between those who plan and acquire the equipment and those who maintain it to ensure its readiness, TYAD can deliver more effective and efficient management of weapon systems for DOD. This communication is all the more important as the Army is not only fielding new network equipment, but is simultaneously "cleaning up" the battlefield by removing aging technology, converging existing capabilities and simplifying next-generation equipment.

TYAD is an Army Center of Industrial and Technical Excellence for C4ISR as well as electronics, avionics and missile guidance and control. This designation by the secretary of the Army allows the depot to enter into formal public-private partnerships with

the contractor base. Thus TYAD can make the most of its capabilities, which include full-spectrum logistics support for sustainment, overhaul and repair, fabrication and manufacturing, engineering design and development, systems integration, post-production software support, technology insertion, modification, foreign military sales and global field support to warfighters across DOD.

To solidify this approach, the Program Executive Office for Command, Control and Communications – Tactical (PEO C3T), which fields the Army's tactical communications network, and TYAD entered into a formal agreement in October 2015 designed to build collaboration, identify upcoming needs, conduct better life-cycle management and look for more partnership opportunities. Already, the recently formed Strategic Initiatives Integrated Process Team (IPT) is creating a comprehensive approach.

For example, the IPT—the first developed with a PEO—enables the depot to help shape PEO C3T program depot maintenance strategies earlier in the planning process. With the IPT, a broad-based relationship is possible between TYAD and PEO C3T, allowing for the planning and execution of core depot maintenance requirements at TYAD for any of the PEO's weapon systems, in accordance with existing statutes.

STRENGTHENING BONDS

While good working relationships always existed at the individual program management level, there was nothing in place that reached across the whole PEO and senior leadership at TYAD. The IPT will close that gap.

By law, each service must ensure that the U.S. military retains critical core capabilities. A principle known as the 50/50 rule

IN-HOUSE SOLUTION

The Manpack Radio is the Army's first networking radio that provides two channels for communication, serving as a critical bridge in the Army network by connecting Soldiers at the company level and below with real-time voice and data. Mounted inside tactical vehicles or carried dismounted, the radio provides beyond line-of-sight connectivity through multiple waveforms. In 2014, the IPT created by PEO C3T and TYAD helped open lines of communication that resulted in a solution for a universal tray mount for the Manpack: a modification to an existing mount. Without the IPT, this effort could have gone out for solicitation instead. (U.S. Army photo)

requires military program managers to use the organic industrial base—depots and arsenals—rather than private contractors for at least half of the programs' maintenance and repair functions.

With the IPT, TYAD gains a forum in which to communicate strategically with PEO C3T, its largest customer. Likewise, with key systems in or entering sustainment, PEO C3T will know firsthand how it can maximize its use of the organic industrial base to provide better value to the Soldier.

SATELLITE REFRESH

SPC Emmanuel L. Tate, signal support systems specialist, and CPL Nicholas L. Dye, STT operator, both with 1st Battalion, 66th Armor Regiment, 3rd Armored Brigade Combat Team, 4th Infantry Division (3-4 ABCT), test the strength of the signal their STT is pulling at Camp Buehring, Kuwait, in February 2015. The STT was the first of many subparts of WIN-T Increment 1, the tactical communications network first fielded in 2004 to support forces in Iraq and Afghanistan, to be overhauled at Tobyhanna in a partnership between the depot and PEO C3T's PM WIN-T to return aging equipment coming in from theater to a like-new state. (U.S. Army photo by SPC Gregory T. Summers, 3-4 ABCT Public Affairs)

EARLY WINS

In 2014, when it came time for PEO C3T's Project Manager for Tactical Radios (PM TR) to maximize the effectiveness of radio requirements in a nondevelopmental item environment, TYAD worked in partnership with PM TR's Technical Management Division to find a solution for a universal tray mount for the new two-channel, software-defined Manpack Radio. The IPT helped open lines of communication that resulted in TYAD modifying and redesigning an existing mount to produce a solution that can fit into any vehicle.

TYAD is now producing the first 200 universal mounts through low-rate initial production and plans to ship the first batch this spring to platform designers of Mine Resistant Ambush Protected vehicles, the Abrams tank and other vehicles for installation and assessment. Without the IPT, this effort could have gone out for solicitation instead of TYAD executing a quick modification of an existing mount.

PM TR has a memorandum of agreement (MOA) with TYAD for radio support that is updated and funded yearly. This MOA covers stocking, storing and issuing PM TR assets, as well as software upgrades, unserviceable asset screening and cable fabrications. PM TR is also partnering with TYAD on warranty repair agreements with companies, with the potential to provide full-rate production radios to PM TR. The IPT is expected to standardize procedures so that program managers can make better milestone decisions in a program's acquisition life cycle.

In October 2015, the IPT also helped facilitate a successful memorandum of understanding (MOU) between TYAD and PEO C3T's Product Lead for Common Hardware Systems (CHS), the Army's one-stop shop for tactical commercial off-the-shelf information technology (COTS IT) hardware. In essence, the MOU establishes a program whereby CHS and Tobyhanna will collaborate to repair out-of-warranty CHS COTS IT hardware. Tobyhanna has the capability to repair 78 CHS part numbers, giving units and program offices a means to replace their hardware by using the Army's organic industrial base instead of going to the original equipment manufacturer.

The MOU will also enable TYAD to build upon the repair and reset capabilities of the assets that the TYAD workforce is already working on and to establish standards and processes internally for the equipment that it hasn't yet seen. Furthermore, the MOU sets up TYAD as a viable sustainment partner for the upcoming CHS-5 contract, with an anticipated release in 2017.

The CHS-5 contract requires vendors to establish a public-private partnership with TYAD to ensure that competitors for the contract consider the Army's organic

industrial base and future sustainment of these commercial hardware technologies for requiring program offices. The public-private partnership enables TYAD, in turn, to become certified to do warranty repair work and subsequently transition into sustainment repair once the warranty expires.

The success of the CHS MOU and past projects within PEO C3T's Product Lead for Network Enablers (PL Net E) will also help establish standards for upcoming efforts. For example, in the next several years, as cryptographic key expiration dates approach for equipment used to safeguard information on the battlefield, the Army is ramping up an effort known as the Embedded Cryptographic Modernization Initiative. This new project involves updating and modernizing a large population of various systems with embedded cryptography, including the Single Channel Ground and Airborne Radio Systems (SINCGARS), with more than 300,000 currently in the field.

This massive effort could harness TYAD's capabilities to physically modernize these systems. The radios, many of which have been in the field for several years, will also need to be refurbished before the new cryptographic equipment can be installed, and TYAD—which probably would do the reset—could also become a logical choice for the retrofit. The SINCGARS radios are already in sustainment with TYAD, so this effort would be a matter of increasing the scope and scale of the depot's work. The IPT would help inform PEO C3T and PL Net E as to what capability TYAD has, how the depot operates and how it could manage an increase in scope.

In an era of increasing requirements, quickly evolving technology and shrinking budgets, a holistic approach to sustaining communications and electronic equipment is not just a nice-to-have, but a necessity.

MULTISERVICE CAPABILITY

Felicia Wolverton, an electronics worker at TYAD, tests a power distribution panel for the AN/TPS-75 Radar System. Wolverton and other technicians in the depot's Surveillance Systems Branch repair, modify, test and install components and subassemblies on Air Force AN/TPS-75 and Marine Corps AN/TPS-63 and AN/TPS-59 radar systems. TYAD is a recognized leader in logistics support for C4ISR systems across DOD, making its partnership with the acquisition program managers in PEO C3T all the more important. (U.S. Army photo by Steve Grzezdzinski)

BUILDING ON EXPERIENCE

Already, the Project Manager for Warfighter Information Network – Tactical (PM WIN-T) Increment 1, the tactical communications network first fielded in 2004 to support forces in Iraq and Afghanistan, has teamed with TYAD for an equipment overhaul that returns aging equipment coming in from theater to a like-new state. Although WIN-T Increment 1 contains many subparts, the overhaul began with one: the Satellite Transportable Terminals (STTs).

This effort marked the first time since the program began fielding that the STTs would be overhauled. The Army selected the STTs to kick off the TYAD overhaul effort because of the large number of them in the WIN-T Increment 1 program—more than 1,800—and the amount of battlefield wear and tear they had experienced. The overhaul began in FY14 as a small pilot program that is slowly ramping up as TYAD optimizes

its overhaul process, and served as an engineering model to help the depot develop capability for each terminal type.

The streamlined communication made possible through the IPT will help establish processes as more equipment from WIN-T Increment 1 and eventually WIN-T Increment 2 comes to TYAD for sustainment. Already, TYAD is working with the original equipment manufacturers that build the WIN-T Increment 2 system in preparation for the transition, demonstrating the kind of coordination that previously occurred later in the sustainment timeline. Acting on lessons learned and through the open lines of communications provided by the new partnership, TYAD is staying ahead of the transition to sustainment.

MAKING IT BETTER

TYAD Electronics Engineer James Kachmarsky performs a continuity check between the power input and the power output of an MT-6352B/VRC radio tray, which supports vehicle installation for the Manpack Radio system. TYAD engineers are developing this modification of the MT-6352 radio tray, which includes replacing internal wiring with a single circuit card assembly. Upgrading communication systems and subsystems is a big part of TYAD's C4ISR sustainment mission. (U.S. Army photo by Steve Grzezdzinski)

CONCLUSION

Work is underway to standardize the process for developing core logistical documentation that increases coordination and collaboration between the organizations, to ensure best-value maintenance and sustainment of all weapon systems for the joint warfighter.

As the Army scales down, it is growing more reliant on tactical communications technology to provide technical overmatch for an increasingly expeditionary force. Sustainment efforts will become all the more critical. Standardizing how the two organizations—one in acquisition, the other in sustainment—work together will allow for smarter materiel sustainment as more key programs transition to life-cycle management.

*For more information, go to the PEO C3T website at **http://peoc3t.army.mil/c3t/** and the TYAD website at **http://www.tobyhanna.army.mil/**.*

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DESTIN

IMPROVING THE USER EXPERIENCE
Soldiers assigned to 4th Battalion, 23rd Infantry Regiment, 2nd Stryker Brigade Combat Team, 2nd Infantry Division communicate during a noncombatant evacuation operation in January, as part of Decisive Action Rotation 16-03 at the National Training Center, Fort Irwin, California. After decades of fielding separate hardware and software solutions for different functions, the COE promises to enable the Army to fix system issues, improve capabilities and patch cybersecurity risks faster and more cheaply than current processes. (U.S. Army photo by PFC Kyle Edwards, Fort Irwin Operations Group)

ATION: INTEGRATION

The Army's Common Operating Environment establishes a shared foundation of hardware and software to streamline capability upgrades, fixes and training for an easier, cheaper and faster Soldier experience.

by Ms. Kelly Alexander

When Tesla Motors wants to increase the range of its electric vehicles—or add blind spot warnings, automatic emergency braking or a better sound system—it doesn't have to build a new car.

Instead, the company simply deploys an over-the-air software update to its cars already on the road. Equipped with a common software baseline, the vehicles can receive simultaneous upgrades to different features, saving the manufacturer and car owners significant time and money.

The Army is on the verge of a similar breakthrough with its information technology (IT) systems. After decades of fielding separate hardware and software solutions for different functions—such as fires, maneuver, intelligence and navigation—we are now making the grueling but necessary transition to a common infrastructure that will allow warfighting capabilities to be delivered as integrated, Web-based software applications. Known as the Common Operating Environment (COE), this foundation links command posts, platforms, sensors and Soldiers, and will enable the Army to fix system issues, improve capabilities and patch cybersecurity risks faster and more cheaply than current processes.

Achieving COE is a marathon, not a sprint. Launched in 2010 with an Army directive and a grand plan, the COE today is a sprawling effort that encompasses more than 150 programs of record (PORs) and 11 program executive offices (PEOs). There are thousands of

COE-compliant systems now in the field, and an enhanced version is on track for delivery as a critical part of the Army's Mission Command Network of 2020.

The COE is not itself a POR, but rather a system of systems that applies standards and an open architecture to unite existing programs, with the goal of delivering technologies in a more user-friendly, cost-efficient way. In an environment where most acquisition guidance and legislation is focused on PORs, the COE represents a major cultural change for the Army.

Because of the sheer number of systems, technologies and organizations involved, it requires extensive collaboration and governance to synchronize capabilities for deployment in order to achieve the desired user experience.

But the pain comes with significant payoff. As in the Tesla model, the COE's software-driven approach to support and sustainment will enable the Army to continuously improve capabilities over time by delivering updates to applications. This does more than finally bring the Army in line with commercial best practices. It also will allow us to keep up with our own pace of change as tactical units become more expeditionary, demand more agile command posts and extend the network down to the Soldier level.

A NEW PLAYBOOK

A fairly new company, Tesla Motors had the advantage of starting out in 2003 using current business models of building integrated systems from the ground up. The Army, on the other hand, has needed to evolve by adapting current business models to hundreds of existing systems in various configurations.

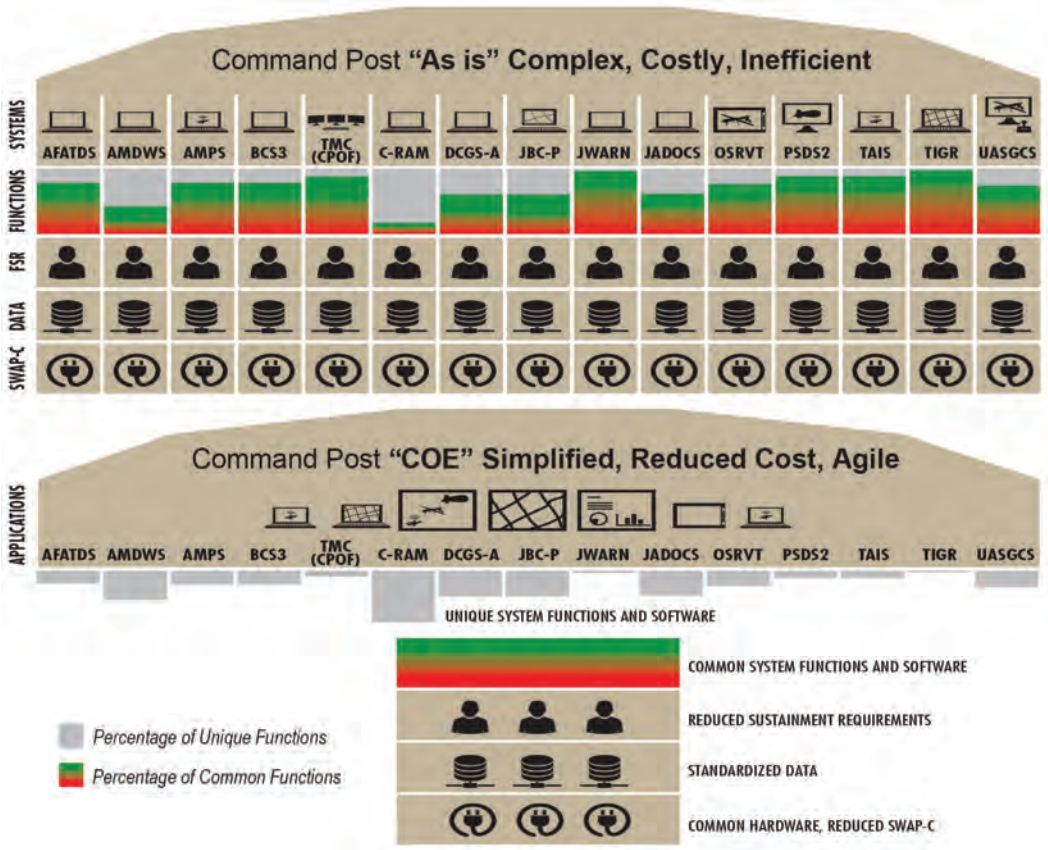
To effectively manage this dramatic change, the assistant secretary of the Army for acquisition, logistics and technology (ASA(ALT)) has carved the COE into six functionally based computing environments (CEs), led by program executive offices: 1) Command Post, 2) Mounted, 3) Mobile Handheld, 4) Sensors, 5) Real-Time/Safety Critical/Embedded, and 6) Data Center/Cloud/Generating Force. At the ASA(ALT) headquarters level, the System of Systems Engineering and Integration (SoSE&I) Directorate has the responsibility to implement COE by providing enterprise-level system-of-systems engineering and architecture products, governance, synchronization and execution oversight.

Within each CE, there are anywhere from six to 53 different PORs, each with a separate project or product manager responsible for a migration plan to bring the system into COE compliance. Often, these plans involve multiple steps to complete the evolution from current "thick client" systems to Web-based software applications. This incremental approach is necessary but also complex; it results in multiple versions of the same CE that reach readiness for fielding at different times and then must be synchronized for deployment as part of the overall COE.

To support these migrations, the Army had to make initial investments in improved infrastructure such as common software for maps, chat and other functions, and high-performing servers that can store and process data previously managed by multiple, individual machines. We had to adopt common technical standards that affect current PORs as well as future capabilities, while tailoring program management timelines

COE IN ACTION

SFC Teddy Scott, field artillery data specialist with the U.S. Army Operational Test Command's Integrated Test and Evaluation Test Directorate, uses the CP CE fires widget during a risk reduction evaluation event at Fort Bliss, Texas, in November 2015. "Web-based widgets mirror a Web page you would use every day," said Scott, who generated fire support using the Advanced Field Artillery Tactical Data System and viewed a common map of the engagement area using CP CE version 2, one of six computing environments that make up the COE. (U.S. Army photo by Devon Bistarkey, PEO C3T)



KEY

AFATDS: Advanced Field Artillery Tactical Data System
AMDWS: Air and Missile Defense Workstation
AMPS: Aviation Mission Planning System
BCS3: Battle Command Sustainment Support System
CPOF: Command Post of the Future
C-RAM: Counter-Rocket, Artillery, Mortar
DCGS-A: Distributed Common Ground System-Army
FSR: Field service representative
JBC-P: Joint Battle Command-Platform
JWARN: Joint Warning and Reporting Network
JADOCS: Joint Automated Deep Operations Coordination System
OSRVT: One System Remote Video Terminal
PSDS2: Persistent Surveillance and Dissemination System of Systems
SWAP-C: Size, weight and power – cooling
TAIS: Tactical Airspace Integration System
TIGR: Tactical Ground Reporting
TMC: Tactical Mission Command
UASGCS: Unmanned Aircraft System Ground Control Station

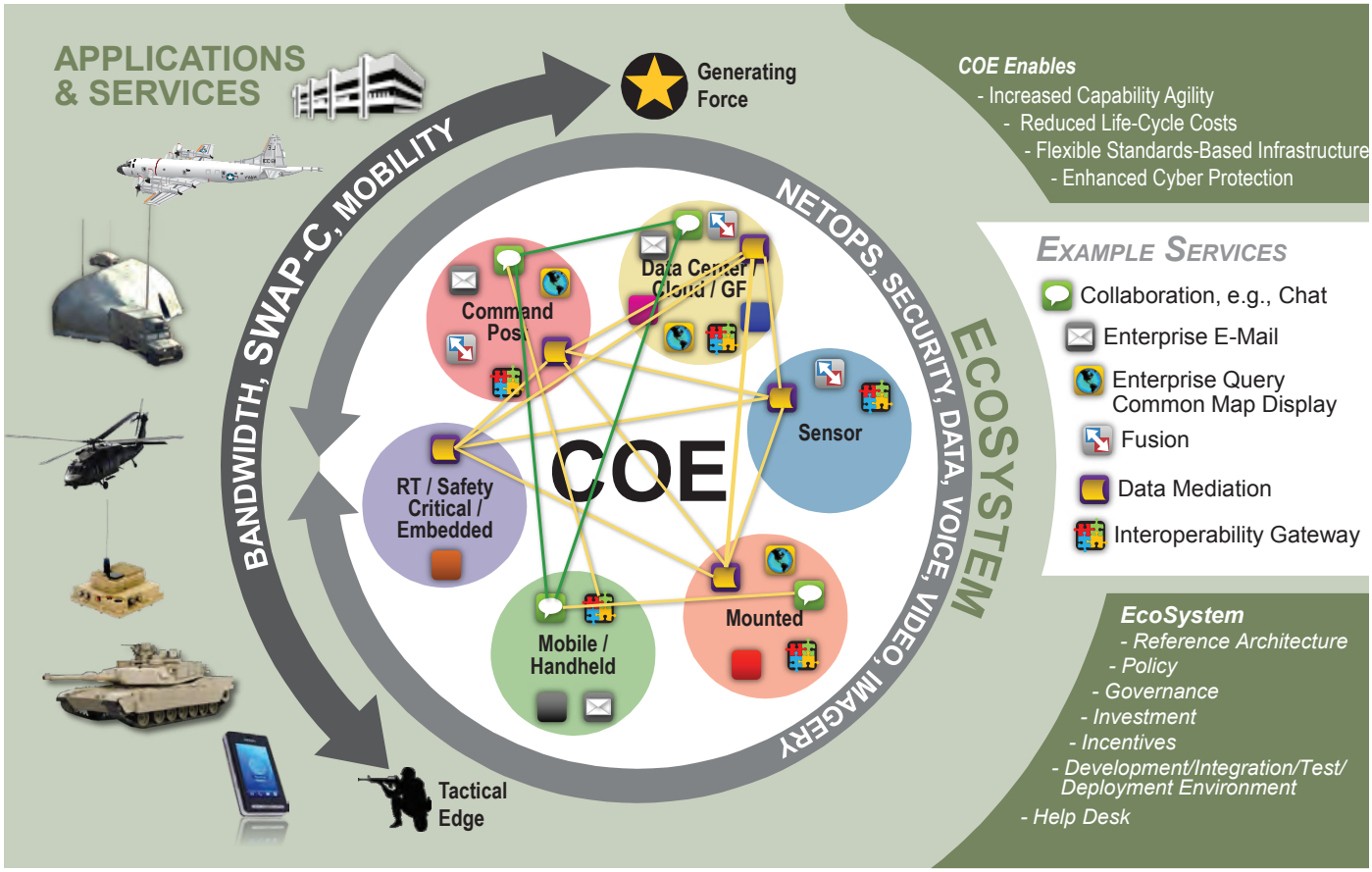
FUTURE VISION

The Army Operating Concept, "Win in a Complex World," envisions an expeditionary, agile force ready to be task-organized and deployed on short notice to austere locations, and capable of conducting operations immediately upon arrival. But today's complex, hardware-dense assortment of information systems slows and weighs us down. The COE aims to change that by bringing tactical capabilities closer to what users experience with their integrated, lightweight commercial devices. (SOURCE: Denise Rule, PEO C3T)

to reflect the COE's system-of-systems approach. All of this groundwork requires intensive cooperation across the Army acquisition, requirements and test communities, along with the Army staff.

But as challenging as this evolution is, Army senior leaders agree that we can't stick with the status quo. Today, Army information (IT) systems are developed individually and on their own timelines, with significant redundancy in hardware and software. They are integrated at a test facility after the fact, and it can take months or years to certify integrated capability. After fielding, when a program needs to upgrade hardware or custom software, the Army must send out a specialized team of field service representatives, often at considerable expense, to execute the update. It's a model that worked well for many years, but risks leaving the Army behind in today's software-driven world—where consumers can download apps, update security settings or install the latest version of an operating system over the air in a matter of minutes.

Think of the COE as a new playbook for how Army IT products are built and deployed. Following the open systems architecture approach of companies like Apple and Google, the COE establishes a common foundation of software, services and interfaces across key systems, which developers use to make different capabilities interoperable "out of the box" rather than having to integrate them down the line. The COE also includes software development kits that provide third parties the means to create new applications over time to meet changing technologies and operational needs.



MAPPING THE BENEFITS

Across all six of its CEs, the COE is designed to save time and money, enhance cybersecurity and increase agility by applying shared hardware and software solutions to myriad computing functions. (SOURCE: Denise Rule, PEO C3T)

LESS IS MORE

The COE supports more efficient product development and sustainment in several ways. First, it identifies "cross-cutting" capabilities, such as geospatial visualization, that in the past were delivered separately within each warfighting system. Users had a map for fires, a map for intelligence, a map for airspace management and so on. Under COE, these separate solutions are replaced with common software tools, so the same mapping capability could be used by several programs that require it. Not only does this convergence provide a common look and feel for the Soldier, it also reduces the number of software licenses the Army has to purchase and maintain for similar capabilities. This approach enables project managers (PMs) to focus their resources on innovating and maturing their own new capabilities, rather than maintaining duplicative enablers and infrastructure.

The COE also brings savings in hardware by introducing common servers that increase command post agility while decreasing specialized field support. The Tactical Server Infrastructure (TSI) effort under the Command Post Computing Environment (CP CE) merges operational and intelligence functions onto one common set of servers at secret and lower classification levels. TSI reduces hardware by combining those functions on one machine.

At the same time, it increases capability with modernized, high-performance servers that provide significantly more processing power, memory and storage capability at each Army echelon. It also standardizes server installation, configuration and management, including automation scripts that enable faster setup for the user. With TSI in place, Soldiers from the signal and

intelligence areas become cross-functional specialists who only have to train on and maintain one type of server.

The COE will further streamline field support through its ability to deliver periodic software updates and security patches over wired or wireless Internet. Currently, system updates are done manually with service technicians deploying to end-user sites. It's a time-consuming, sometimes risky process that's vulnerable to human error—and one of the main cost drivers of sustaining tactical IT systems. But as current systems migrate to COE in the form of software applications, there won't be a need to physically "touch" every machine to make a change. Instead, systems will receive updates over the network that can apply to several applications at once—just as commercial systems such as smartphones are updated today.

The ability to update software remotely also has the potential to strengthen cybersecurity by cutting down on the inconsistency in compliance and the time necessary for manual system patching. For example, plans call for the CP CE to take advantage of functionality in the Rapid Vehicle Provisioning System, an automated infrastructure that shortens the time required to establish and configure a brigade's Warfighter Information Network – Tactical (WIN-T) network.

Using the same automated structure, new security patches for CP CE can be delivered virtually and made available for units to download over the network. Soldiers see an alert indicating that a patch is available for download, and can pull down and select the patches based on their mission schedule. From there, the patches are applied automatically. The system sends a report when they are complete—allowing the updates to happen in the background, with minimal disruption to unit operations.

BATTLE LAB EFFICIENCIES

As with any piece of equipment, the COE's real capability comes into play as the Army establishes training and tactics, techniques and procedures (TTPs) to enable Soldiers to effectively employ COE-compliant systems in the field. The U.S. Army Training and Doctrine Command (TRADOC) is already preparing for this change in its battle labs and centers of excellence.

As a start, the Mission Command Battle Lab is working with the Mission Command Center of Excellence and the PM for Mission Command (MC) to bring a future instance of CP CE, known as CP CE version 3.0, into the lab approximately two years ahead of its planned fielding date. Battle Lab staff will experiment with the CP CE software and current tactical IT systems in different scenarios to support existing command post processes, identify potential new procedures, and determine the training requirements for installation, configuration, management and usability. They can accomplish this without purchasing new hardware, instead accessing CP CE capabilities as Web-based software applications from existing tactical laptops.

PM MC and the Battle Lab will interface with each other over the two-year period, with the lab providing feedback to the PM and the PM providing over-the-air updates to the software. This process will enable TRADOC to develop and refine its COE training and TTPs as the capability continues to evolve before fielding. The result: significant time savings in TTP development.

As the Army fields incremental updates to COE, we will continue to sustain the battle labs and other key TRADOC organizations with current versions of COE capability, allowing them to evolve training practices continuously and provide ongoing feedback to PMs.

CONCLUSION

With its software-based approach, Tesla has harnessed current technology to meet consumers' demand for electric cars that get smarter over time. With COE, the Army is trying to do the same with a much bigger portfolio, and with much more than driver satisfaction at stake.

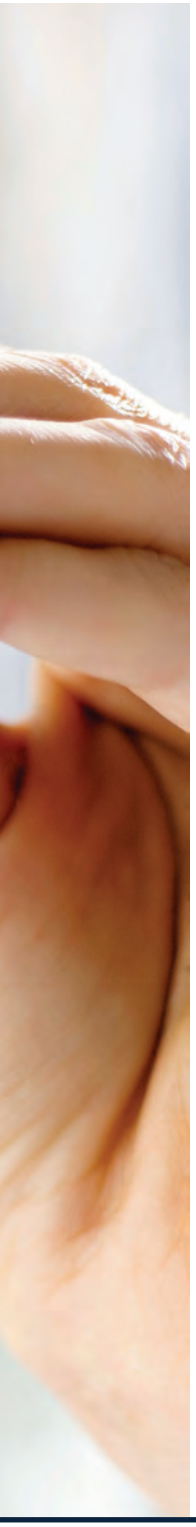
The technical and cultural transition to COE has not been easy or quick. But if we continue to confront our challenges to get COE right, the Army will meet Soldiers' needs for simpler, better-integrated IT systems that reduce their burdens in training, operations, maintenance and sustainment. In an increasingly networked, expeditionary force, the benefits will last a lot longer than a tank of gas.

For more information, go to ***http://asc.army.mil/web/wp-content/uploads/COE_Flip_Book.pdf.***

MS. KELLY ALEXANDER is the COE director for the ASA(ALT) SoSE&I Directorate. She holds an M.S. in national resource strategy from the Industrial College of the Armed Forces (ICAF), an M.S. in engineering management from the George Washington University (GWU) and a B.S. in industrial engineering from North Carolina State University. She is currently working on a doctorate in systems engineering at GWU. She is a member of the Army Acquisition Corps with senior-level certification in program management from ICAF.

SIMPLE SENSING
A thermometer is a simple sensor: It detects temperature, and that's all. More complex sensors detect and, because of the more detailed and complete way of doing so, can also confirm or rule out; hence the need to "fuse" information gathered from multiple sensors. (Photo by grinvalds/iStock)

TECHNICALLY SPEAKING



DETECT and CONFIRM

A simple method for sensor fusion, described simply

by Dr. Tom Stark

A lot of very smart people work in Army acquisition—scientists, technicians, engineers—and many are the best in the world at what they do. That work is often mind-bogglingly complex, given the nature of the systems that they help to design, develop and deliver for the benefit of the Soldier. They often speak in technical language that people outside their area of expertise just wouldn't understand. But it's important that taxpayers and members of Congress and their staffs understand it—not just because taxpayers have a need and a right to know, but also because it's really hard to have a conversation when only one party speaks the language.

So it's a helpful exercise to step back from the highly particular language and jargon of a technical field and try to express those highly technical ideas in language that everyone can understand. "Technically Speaking," a regular feature in Army AL&T magazine, challenges subject-matter experts to do just that, using the plainest language possible.

Sensor fusion is a big deal for DOD, so much so that, according to an article in the January – March 2015 edition of Army AL&T magazine ("Hybrid Threats, Hybrid Thinking," Page 68), "The U.S. Army Communications-Electronics Research, Development and Engineering Center … is developing a foundational architecture for how the Army will immediately and cost-effectively integrate emerging sensor advances into the traditionally longer development cycles of conventional military platforms and systems." But getting the many different types of sensors to talk to one another is perceived as very difficult.

Dr. Tom Stark begs to differ. He proposes a relatively simple way to fuse sensors.

Every year, the U.S. government pours billions of dollars of taxpayer money into the development of sensors and sensing technologies. However, while the government spends lots of money developing "new and improved" sensing methods, comparatively little attention is given to developing holistic methods to fuse data from existing sensors, to achieve results whereby the whole is greater than the sum of its parts. While there are probably many reasons for this, it is at least partly because sensors are typically developed to monitor a single isolated detection thing called an "observable," rather than to work in a complementary way with other sensors to monitor a continuum of observables.

Additionally, people tend to think that sensor fusion is something that needs complex mathematical formalism (i.e., it has to be really hard), so that it can only be successfully accomplished with lots of brain (and computing) power.

This is contrary to my experience, as I have found sensor fusion to be innate and practical, something that we humans perform many times, every day. With this in mind, my goal is to demystify sensor fusion, at least a little. To do this, consider what I call the "locate and confirm" sensor fusion method, which is one of the more practical ways that sensor data can be fused to yield improved detection results.

LOCATE AND CONFIRM

Sensors detect. With simpler sensors, sometimes that's all they do. Think of a thermometer. It detects temperature. More complex sensors also detect, but because of the more detailed and complete way that they detect, they can also confirm or rule out. This is why it is helpful to "fuse" information gathered from sensors.

The locate-and-confirm method helps because it can allow for very low false-alarm rates and because it is fairly simple: It typically takes only a two-step detection process and some very basic reasoning methods. In short, one sensor detects, or locates, something that is not right—an anomaly—and the second sensor confirms a smart guess that can be made either by a person or a computer, or rules it out. Being able to quickly rule out something bad and lower the false-alarm rate is just less expensive.

Imagine a mother with her young child. The child appears to be sick: Is the cause a routine cold or flu, or is it a highly contagious childhood disease, such as mumps or measles? To find out, the mom takes her child to the family doctor.

What the doctor will search for are, in terms of sensors, anomalies. Normally the child feels well, but now does not. Detecting the anomalies will help determine why, and in turn will help with the diagnosis.

The first step is a routine exam, or scan. For example, the nurse might take the child's temperature. Is there a fever? The nurse also might scan the child's ears—are they red or swollen? Is the child's throat red, sore or swollen?

Even if the answer to each of these questions is yes, that is not a diagnosis, but the doctor can use these detected anomalies to come up with a smart guess about why the child is sick.

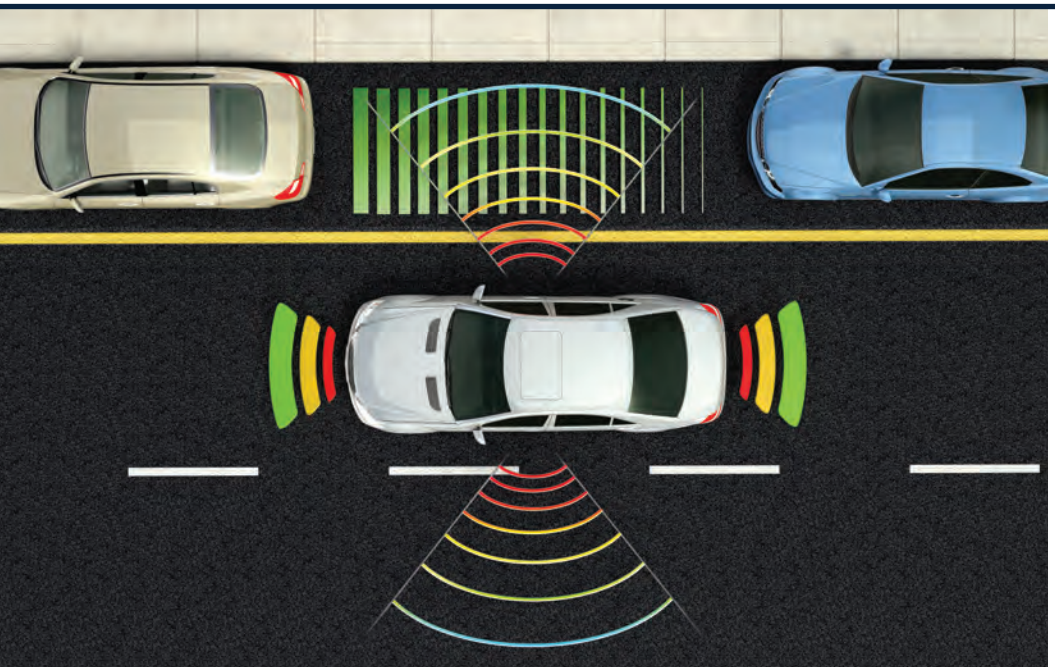
Like the doctor, a sensor user is trying to find anomalies. For example, when attempting to detect airborne biological agents, a sensor might look for an anomaly in the form of an abnormally large concentration of aerosolized particles, in the particle size range where they are optimally taken up by the lungs. Similarly, when attempting to detect buried land mines, you might employ a sensor that could detect anomalies in the form of buried objects that are moderately large and have a metallic signature.

Most of the time, anomaly detection is simple, straightforward and relatively inexpensive. There are frequently anomaly detectors that work well for lots of uses. However, while finding an anomaly may seem a cheap way of coming to a quick answer, the anomaly alone is not the answer. For anomaly detection to be useful in providing the whole picture, the detection process must set the stage for the user to determine the cause for the anomaly.

If the doctor suspects a throat or ear infection, he or she will try to confirm that guess—strep throat, maybe—with a throat swab and culture that then goes to the lab for confirmation—or rule it out. In the same way, the sensor user wants to be able to figure out what caused the anomaly.

A SIMPLE, POWERFUL TOOL

Generally, detectors used in the confirmation step of the locate-and-confirm method are more difficult to find than anomaly detectors, and more expensive. Also, they can be harder to use, especially in the circumstances of a military operation. (Similarly, it's easy for the doctor, in his home office, to take the swab of the child's throat and send it to a lab for confirmation, but much more difficult if the doctor is working in a remote village without electricity or a nearby lab.) Still, even with cost and difficulty, confirmation sensors may be worth it because they can lower false-alarm rates.



PARTS OF THE EQUATION

Some new cars come equipped with sophisticated sensors capable of detecting other cars within colliding distance, in addition to simple sensors, such as the speedometer and tachometer. Those older sensors only detect, as when the check-engine light comes on, providing only the information that an anomaly has been detected, but no detail as to what the anomaly is. Other sensors are needed to confirm the cause. (Image by adventtr/iStock)

If detection sensors are cheap, why are confirmation sensors expensive?

A thermometer that a doctor uses to tell if a child has a fever probably doesn't cost much, but a lab, with all of the equipment and people needed to confirm or rule out a single kind of infection, offers a different example. Or consider the "check engine" light in the car, which tells you only that something is wrong, but not what. Finding that "what" requires more sophisticated equipment and usually considerable expense. Still, there is good reason to find the root problem because, while it could be nothing, it also could be a warning of something catastrophic.

The locate-and-confirm method is simple yet powerful, because the anomaly detection and confirmation processes work together very well.

Detection does not give specifics, but it gives a set of causes for the anomaly. Thus, detecting an anomaly often shows that more detection must be done. On the other hand, while the confirmation method does provide specifics, applying it against a large set of possible causes for the anomaly can be unwieldy.

CONCLUSION

While confirmation sensors provide a clear-cut means for lowering false-alarm rates in detection, their benefits outweigh their costs only in certain applications. In addition to the example of medical diagnosis, the utility of fused detection and confirmation sensors is evident in applications for which the sensor system is conceived to detect and confirm improvised explosive devices (IEDs) or biological agents, situations in which false alarms can produce devastating results.

However, in applications where a radar track shows an anomaly in the sky that can be correlated with an incoming missile or aircraft, a confirmation sensor may not be needed, because only a very limited set of objects can produce an anomaly that meets that profile of the missile or aircraft.

The locate-and-confirm sensor fusion method provides a cost-effective, practical, adaptable and tractable way of fusing sensor data to minimize sensor system false alarms. Further, it is innately easy to understand, showing the ease with which complementary sensing observables can combine to provide a whole that is greater than the sum of its parts.

DR. TOM STARK is founder and president of Principia Solutions LLC, a firm that specializes in solving emerging high-risk technical problems, in which the problem and solution spaces are not well-defined. Previously he served as a scientist at the Joint IED Defeat Organization, managing and fielding technologies in a range of areas, including explosives detection, counter-person and counter-vehicle suicide bombing, and sensor fusion. Most recently, he was chief scientist and chief technical officer of Global Technical Systems, a woman-owned small business that develops next-generation energy storage solutions and intelligent sensor networks. He holds a Ph.D. and master's in physics from the University of North Texas, and a bachelor's in physics from Virginia Commonwealth University. He is a member of Sigma Pi Sigma, the physics honor society. His current areas of specialization include active and passive forms of threat detection, intelligent sensor systems, signal processing, energy and power systems and numerical modeling.

SPOTLIGHT:

SSG SERGIO DE LA PENA

From Texas to Iraq to Germany, from artillery to contracts

SSG SERGIO DE LA PENA

COMMAND/ORGANIZATION:
928th Contracting Battalion/Regional Contracting Office

TITLE:
Organization program coordinator for the Government Purchase Card Program

DAWIA CERTIFICATIONS:
Level I in contingency contracting

YEARS OF SERVICE IN WORKFORCE: 3

EDUCATION:
B.S. in business management, Excelsior College

AWARDS:
Army Commendation Medal (4 Oak Leaf Clusters (OLC)), Army Achievement Medal (4 OLC), Army Good Conduct Medal, National Defense Medal, Iraq Campaign Medal, Global War on Terrorism Expeditionary Medal, Global War on Terrorism Service Medal, Korea Defense Service Medal

After 12 years in the Army, SSG Sergio De La Pena came to the acquisition world from field artillery. It was a "rather unique" change: "The contracting side has stressors that force you to be a bit more creative and think outside the box. We are constantly doing research in order to provide our customers and the government with the best deal possible."

He was born and raised in Brownsville, Texas, and enlisted in the Army at age 23 "to make my family proud." As an artillery noncommissioned officer, De La Pena was a multiple-launch rocket system crewmember, field artillery meteorological crewmember and a surveyor.

His parents immigrated from Mexico in search of a better life. "I am their first-born and a first-generation American citizen. I felt it was my patriotic duty to serve the country that gave my parents, my siblings and me an opportunity at the American dream," he said. De La Pena recently re-enlisted for an indefinite period. He's pursuing a master's degree in management and building the skills needed for a career in contracting.

What do you do, and why is it important to the Army or the warfighter?

I'm currently the organization program coordinator for the Government Purchase Card Program at the 928th Contracting Battalion/

Regional Contracting Office, a U.S. Army Materiel Command unit, in Grafenwoehr, Germany. I've been in contracting for 34 months, and Grafenwoehr is my first contracting duty station.

I provide Government Purchase Card Program cardholders and billing officials with training, guidance, support and advice on their programs. Our mission is to help customers make the best possible purchases that are in their unit's and government's best interest without sacrificing product quality and our taxpayers' money.

How did you become part of the Army Acquisition Workforce, and why?

Field artillery branch is a great branch and one that I am proud to say I was a part of. However, I was in search of a job that would present different challenges not common with the everyday Army. I was introduced to the 51C MOS [military occupational specialty] during a deployment to Iraq in 2011. I was intrigued with the description and I felt that it was the challenge I was searching for. I applied in May 2012, went to school at Lackland Air Force Base in November 2012, and I have not looked back since.

What do you see as the most important points in your career with the Army Acquisition Workforce?

Mentorship, education and career-broadening experiences are the top points. Mentorship is part of the workforce because, coming in, you depend on your peers, seniors, DA civilians and, if you're overseas, the local nationals to help train, guide and mentor you. My first acquisition assignment was in Germany and the local nationals, DA civilians and the military personnel provided superb training, guidance, mentorship and ultimately a friendship that was second to none.

One of the challenges the acquisition workforce presents is the benefit of getting an education. I call it a challenge and a benefit, because this career field encourages everyone to get their bachelor's or master's degrees. Anyone who has worked full time and attended school can tell you it is no easy task and one that can at times be difficult. However, there are numerous programs to help achieve those goals. This career field has pushed me to receive my bachelor's degree, and I am currently pursuing my master's of science in management. The opportunities have been exciting and they have provided me with different avenues of approach regarding which direction to take my career.

"The contracting side has stressors that force you to be a bit more creative and think outside the box. We are constantly doing research in order to provide our customers and the government with the best deal possible."

What's the greatest satisfaction you have in being a part of the acquisition workforce?

How it impacts the Bavarian military community. Our position allows customers from United States Army Garrison (USAG) Bavaria, the Joint Multinational Training Command, the Joint Multinational Readiness Center, the Joint Multinational Simulation Center, the Garmisch community and USAG Ansbach to streamline their purchases. They can make quick purchases, keeping them in the fight. The thought that we can have such a profound effect at such a large scale given the area of the world we live in and the situations we face in Europe is humbling to say the least.

What advice would you give to someone who aspires to a career like yours?

Focus on your education and strive to get your bachelor's degree or higher education as soon as possible. It will make the transition to the Acquisition Corps smoother.

What's something that most people don't know about your job?

Most people do not know how much time, effort and dedication goes into the everyday mission support and services that Soldiers and their family members receive. Nobody really knows who we are until they need us.

—MS. MARY KATE AYLWARD

MOVING THE MISSION FORWARD
PFC Michael Calhoun and SGT Kendall Smalls, both with the 1st Infantry Division Sustainment Brigade, load ammunition for transit near Erbil, Iraq, in January. More than 5 million rounds of small arms ammunition have been donated to aid in the fight against the Islamic State group. As part of a coalition of regional and international nations that form Combined Joint Task Force – Operation Inherent Resolve, the 900th Contracting Battalion and the 82nd Airborne Division integrated their efforts to enable Iraqi forces to counter the terrorist group, re-establish Iraq's borders and retake lost territory to restore regional stability and security. (U.S. Army photo by CPL Jacob Hamby)

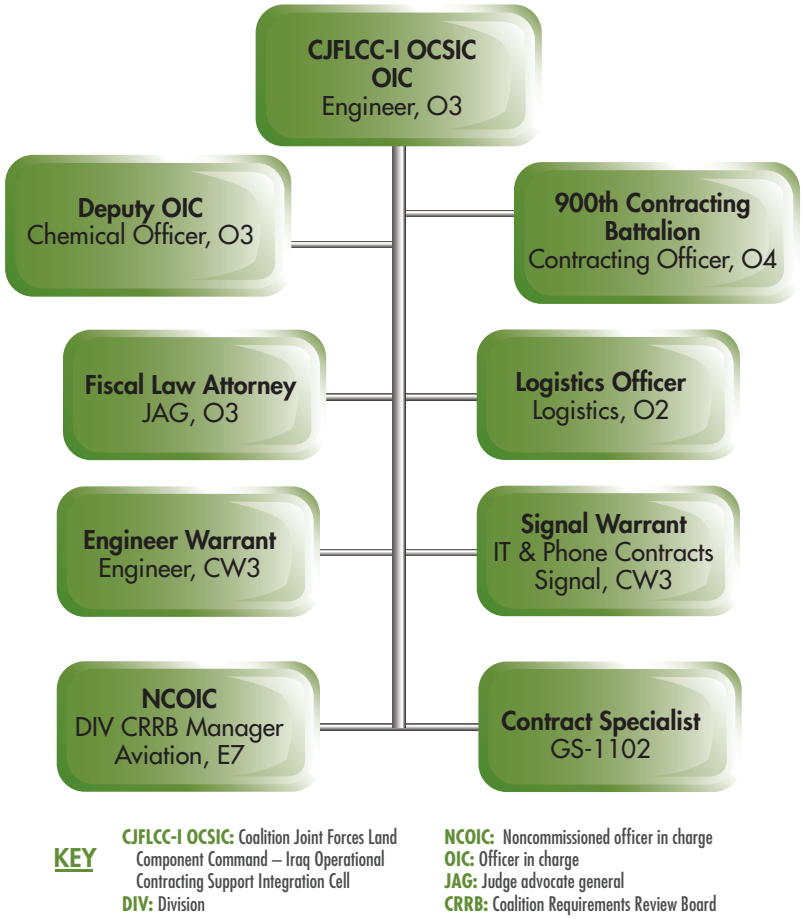
PARTNERING UP

When the 82nd Airborne Division deployed to take command of training, advising and assisting Iraqi security forces, its partnership with the 900th Contracting Battalion was already solid.

by MAJ Timothy G. Godwin

The key to successful operational contracting support (OCS) in complex environments is a partnership between the supported headquarters and the contracting unit—a partnership that should begin months before both units board a plane to deploy. The future joint task force (JTF) and the aligned contracting unit must work together, plan together, train together and deploy together. Only through an established and codified relationship can the two units navigate environments in which contracting increasingly has become a critical element of the operational concept of support.

The 900th Contracting Battalion and the 82nd Airborne Division, both based at Fort Bragg, North Carolina, integrated their efforts as they prepared to deploy for Operation Inherent Resolve, in June 2015. That integration of efforts provides a case study in how two different but complementary units can plan, train and deploy together and, once operations begin, work together immediately and efficiently. In this case, the 82nd Airborne Division became part of Combined Joint Task Force – Operation Inherent Resolve and assumed the mission to provide command and control of coalition troops training, advising and assisting Iraqi security forces. The 900th Contracting Battalion became Regional Contracting Center – Operation Inherent Resolve, providing mission command and contracting support for all contingency contracting in the area of operations. Operation Inherent Resolve is the name for the U.S. military intervention against the Islamic State group, including the campaigns in Iraq and Syria.



ANATOMY OF AN INTEGRATION CELL

The 82nd Airborne Division established the operational contracting support integration cell of the Coalition Joint Forces Land Component Command – Iraq with officers, warrant officers and senior NCOs representing a spectrum of skills, all of whom understood the complex tactical and operational environment of the JTF. The 900th Contracting Battalion assisted the cell as a mentor and business adviser. (SOURCE: 82nd Airborne Division)

FORMING A TEAM

A clear understanding of operational contracting support (OCS) is an essential part of the relationship between contracting personnel and the supported headquarters. Simply put, OCS is the process of planning and obtaining supplies, services and construction from commercial sources in support of commander-directed operations. As stated in Joint Publication 4-10, "Operational Contract Support," OCS requires commanders and staffs to fully consider cost, performance, schedule and contract oversight requirements as well as many other contract support-related matters (for example, risk of the contractor's failure to perform, civil-military impact and operations security) across the joint force.

The three elements of OCS are contracting support integration, performed by the supported command; contracting support, performed by the contracting office; and contractor management, performed by both. Having actionable OCS knowledge requires constant collaboration between contracting and the supported unit. All of which brings us to the first lesson learned: Work together.

As soon as the 82nd Airborne Division received the warning order in early 2015 to deploy in support of Operation Inherent Resolve, the 900th Contracting Battalion received a similar order. Both units started performing mission analysis. Sustainment in Iraq relies on expensive air movement and, as the result of presidentially directed manning levels, depends on contractor support. Both units saw that the contracting support structure was unusually complex, given not just these challenges, but also that Iraq is a sovereign nation that must provide diplomatic clearance to contractors. There were also challenges of supporting a large coalition and the ongoing considerations of contractor security. The Iraq of Operations Iraqi Freedom and New Dawn is not the Iraq of today.

To facilitate working together, COL Michael R. Fenzel, then the 82nd Airborne Division chief of staff, offered space within the division headquarters to LTC Amanda Flint, the 900th Contracting Battalion commander, to embed military contracting personnel within the division headquarters. Assigned to the position and still reporting to the 900th Contracting Battalion, the author served as a member of the 82nd Airborne Division staff for contracting support and assistance.

OCS AS A PLANNING FACTOR

The next lesson learned was: Plan together. OCS planning, however, is primarily the responsibility of the requiring activity, not a contracting function. Only the requiring activity fundamentally understands what it will need to accomplish its mission.

Unfortunately, proficiency in OCS can be hit-or-miss because of a lack of resident

The three elements of OCS are contracting support integration, performed by the supported command; contracting support, performed by the contracting office; and contractor management, performed by both.

TWO UNITS, ONE EFFORT

Soldiers from the 82nd Airborne Division operational contract support integration cell, the 82nd Airborne Division G-8 and the 900th Contracting Battalion work together at Camp Arifjan, Kuwait, to provide operational contract support to Operation Inherent Resolve coalition members and Iraqi security forces. (U.S. Army photo by MAJ Timothy Godwin)

knowledge and skills, even with a contracting officer on hand. Because of the myriad contracting options, the wide variety of contracting authorities and the overall complexity of OCS, it is not commonly incorporated into plans. A key to a feasible, acceptable and suitable plan is to recognize OCS as a mission-essential task with proper command emphasis and a properly trained staff. This is possible through the establishment of an operational contract support integration cell.

The organizational construct for the cell is not fixed. Rather, it depends on the scope, scale and complexity of the mission environment. Accordingly, the author advised the 82nd Airborne Division to select personnel with a variety of specific skill sets, emphasizing integration across multiple staff sections and, most importantly, the ability to effectively translate mission requirements to actionable requirement packets.

The 82nd Airborne Division heeded the advice and focused on establishing an integration cell with officers, warrant officers and senior noncommissioned officers (NCOs) representing a spectrum of skills but all capable of understanding the complex tactical and operational environment of the JTF. To use 82nd Airborne Division terminology, they chose "studs" for the operational contract support integration cell mission. Personnel from various specialities formed the Coalition Joint Forces Land Component Command – Iraq's OCS integration cell. The 900th Contracting Battalion assisted the cell as a mentor and business adviser.

THINK TRAINING IS HARD? TRY LOSING.

The next lesson learned was arguably the most important: Train together. The 900th Contracting Battalion and the 82nd Airborne Division participated in

LIFESAVER

U.S. Marines assemble a water storage unit at Al-Taqaddum Air Base, Iraq, in June 2015. With help from the 900th Contracting Battalion, the Marines secured necessary life support items such as bulk water at Taqaddum. Contracting support allows coalition forces to focus on their primary mission to advise and assist Iraqi security forces in their fight against the Islamic State group. (U.S. Army photo by CPT Christopher Noll)

several training exercises together, from standard day-to-day operations at division headquarters to a U.S. Africa Command simulation that spanned multiple continents.

The first priority, though, should be the two-week OCS course offered by the Army Logistics University. NCOs and officers who complete the course are awarded the 3C OCS additional skill identifier. The integrated contracting unit should encourage the supported headquarters to send as many personnel to the course as possible. This course will give the OCS integration cell personnel, in particular, the necessary skills to generate requirements. It is important for supported customers to understand that requirements generation and planning form the foundation for the entire OCS process and play a significant role in determining success or failure.

After the members of the OCS integration cell have been identified and have received initial training, their training should continue with opportunities to generate real-world requirement packets through the local contracting battalion and U.S. Army Mission and Installation Contracting Command office. Performing management, forecasting and administration of real-world requirements is an important step in taking OCS from a conceptual idea to a tangible process for the integration cell. In addition, such opportunities can help the aligned contracting battalion to strengthen the relationship between the battalion and the cell, and identify the cell's strengths and weaknesses.

The contracting battalion and supported headquarters should conduct joint training exercises in which OCS is incorporated within the mission-essential task list. In March 2015, elements of the 900th Contracting Battalion participated in Judicious Response 15.2 at Grafenwoehr, Germany, which certified the 82nd Airborne Division as a JTF. The integration efforts of the 900th Contracting Battalion as an enabling JTF staff proponent in the 82nd Airborne Division headquarters allowed simulated

contracting actions to be a major part of the simulated noncombatant evacuation order operation. The efforts created a realistic training exercise for the future JTF headquarters and provided opportunities for the 900th Contracting Battalion to perform simulated contracting actions in a deployed environment.

IT DOESN'T GET EASIER; YOU GET BETTER

Finally, the contracting unit and requiring activity should deploy together. The U.S. Army Contracting Command is in the final stages of aligning contracting battalions with Army divisional units. This effort will enable the associated contracting battalions and division headquarters to maintain the same rotational cycle, which is necessary to allow the two organizations to maintain an enduring operational relationship.

To be clear, though, deploying together does not simply mean stepping on the plane together. It consists of the required training and preparation that go into a deployment. The contracting battalion should do its predeployment site survey with its supported headquarters, enabling contracting personnel and the customer to gain the same view of their future operating environment. The contracting battalion should do as much of the required theater training with its customer as possible, including qualification ranges. These training events build bonds between the contracting unit and the customer that will pay dividends later.

Once deployed, the contracting unit and the supported customer should work as closely as possible. Presently at Camp Arifjan, Kuwait, members of the 900th Contracting Battalion and the 82nd Airborne Division operate in the same workspace, providing seamless transfer of requirements from requiring activity to contracting support. Resource managers from the 82nd Airborne Division Combined, Joint Assistant Chief of Staff for Financial Management (CJ-8), the 82nd Airborne Division OCS integration cell and 900th Contracting Battalion personnel perform their daily tasks together. For a complex contracting environment such as Operation Inherent Resolve, clear communication among requiring activity, contract support and resource managers greatly reduces the OCS fog of war.

CONCLUSION

When the future JTF and the aligned contracting unit commit themselves months in advance to work together, plan together, train together and deploy together, they produce a cohesive effect.

The 82nd Airborne Division and the 900th Contracting Battalion recently completed their Operation Inherent Resolve deployment, making a noticeable impact throughout theater and establishing a benchmark for follow-on units. Supported by the teamwork between contracting personnel and the OCS integration cell, coalition efforts against the Islamic State group continue to make a significant impact against the terrorists. Together, contracting personnel and the OCS integration cell are providing contract solutions to operational problems, satisfying warfighter requirements in terms of procurement cost, quality and timeliness.

The 82nd Airborne Division, as the Coalition Joint Forces Land Component Command – Iraq, is able to plan contracting into its concept of support and its concept of operations with realistic capabilities and limitations. Ultimately, contracting personnel and supported units can build upon the successes of the 900th Contracting Battalion and the 82nd Airborne Division to provide even greater operational contracting support for future operations.

For more information on Regional Contracting Center – Operation Inherent Resolve, contact the author at ***timothy.g.godwin.mil@mail.mil****. For more information on Operation Inherent Resolve, go to* ***http://www.defense.gov/News/Special-Reports/0814_Inherent-Resolve****.*

A key to a feasible, acceptable and suitable plan is to recognize OCS as a mission-essential task with proper command emphasis and a properly trained staff. This is possible through the establishment of an operational contract support integration cell.

MAJ TIMOTHY G. GODWIN serves as the operations officer, 900th Contracting Battalion and Regional Contracting Center – Operation Inherent Resolve. He holds an M.A. in procurement and acquisition management from Webster University and a B.S. in parks, recreation and tourism management from Clemson University. He is Level II certified in contracting.

TAKING STOCK
SFC Howard Kane, a quality assurance specialist with the 920th Contracting Battalion, supports the Army's prepositioned stock contract in Kuwait. With budget-induced position cuts across ACC, more leaders will find themselves leading contracting teams overseas and in the U.S. who haven't trained together and come from multiple organizations. (Photos by MAJ Rob Massey, ACC-NJ)

Keeping It SIMPLE

Don't discount the wisdom in the leadership clichés—those old chestnuts go a long way to solving the organizational challenges occasioned by budget-induced force restructuring.

by MAJ Rob Massey

As a graduate student sitting through an organizational leadership class, I was skeptical of the concepts taught: These concepts and the cases they were applied to always seemed too convenient and obvious. However, those same elementary concepts are exactly what contracting professionals and leaders must not lose sight of as they inherit more complicated organizations. The force restructuring that's currently underway across the U.S. Army Contracting Command (ACC) is increasing organizational complexity. But as we advance in our careers, we trick ourselves into thinking that the basic principles of leadership learned early on—lead by example; know your strengths and limitations, as well as those of your team; people want to add value, so let them—are far too elementary to solve current problems.

While acquisition leaders must exercise higher-level critical thinking skills, the solutions to some of the most complicated challenges can be found in those basic leadership ideas.

The Army's force restructuring is transforming the way organizations approach personnel requirements. ACC is immersed in this transformation, finding new ways to source contracting teams to support worldwide contingency operations. In an effort to continue to provide quality contracting support to the Army, ACC is building teams with members from a variety of organizations and bringing that human capital together to target a specific mission. Contracting teams have always conducted missions autonomously, but now they are doing so with a cast of unfamiliar faces. This approach is already being employed in the formation of contracting teams currently supporting the contract administration services (CAS) mission in Kuwait. With little to no time spent training together prior to a mission, building these teams is a challenge in critical thinking for every contracting team leader.

It's a challenge that I faced directly as I led an eight-person contracting team during a recent deployment in support of the Army's CAS mission in Kuwait. In administering a series of service contracts, my team and I had to combine our individual strengths in the correct proportions to reduce contracting risks in the areas of mission, troops and funds. Building a team of individuals from multiple organizations and geographic

FROM INSPECTING SOLDIERS TO INSPECTING HEAVY EQUIPMENT

SSG Patrick Kennison, right, a contracting NCO with the 920th Contracting Battalion, performs oversight on a power generation contract at Camp Arifjan, Kuwait. Recognize transferable skills—for instance, NCOs exercise oversight over their Soldiers and so can do the same for contractors—and you open up new possibilities for staffing a team.

locations was critical to mission success, and required me to dust off some old and seemingly obvious leadership principles.

LET PEOPLE ADD VALUE

Contracting teams providing CAS support include military contracting officers and noncommissioned officers (NCOs), Defense Contract Management Agency (DCMA) quality personnel and DA civilians with quality assurance and contracting backgrounds. Each member of my team, whether by professional experience, upbringing or the climate of the organization they came from, had a unique skill set and personality. But I didn't have the benefit of time to learn these individual characteristics, since building this diverse team had to be done rapidly and while learning the new mission requirements.

In spite of all the fresh faces and the unknown, I was quickly reminded of a very basic organizational leadership principle: as a general rule, people want to add value. Nobody wakes up in the morning, looks in the mirror and says, "I hope I suck today." People want to be contributing members of a team. The challenge for leaders, especially when forming a team around experienced and diverse professionals, is recognizing how best to extract that value from each member.

I quickly established a rotational phase in the early stages of the deployment, moving people through various positions and contract actions as a means of determining strengths and weaknesses. Everyone tried hard and, as expected, some were obviously better in specific areas than others. Once I established individual strengths and weaknesses, I aligned my resources so that each team member could maximize their respective strengths. If I needed research done, my rotational phase helped me identify who could best complete that task. If I needed someone to communicate a problem or topic to a customer, my rotational phase helped me establish who the best communicators were. I also made sure each member received credit for his or her efforts, helping to promote everyone's individual value and foster a more cohesive group. This short-term rotational program had significant long-term payoffs.

LOOK BEYOND JOB TITLES

A second leadership principle I dug up was recognizing that people are more than just a job title. The Army once trained me to be a pilot, but I'd like to think that the sum of my professional experiences equates to more than just being able to take off and land a helicopter. There are several important professional skills that transcend any specific job. Remembering an employee's birthday is a skill. Keeping your email inbox organized is a skill. Delivering a quality presentation is a skill. Recognizing that each member of the team has abilities and experiences that extend beyond his or her basic job title can assist in solving complicated leadership challenges, and creatively employing those experiences paid dividends for my contracting team.

A TIGHT FIT

SSG Patrick Kennison performs quality surveillance on a shuttle bus contract in Kuwait. With a complex variety of experience and skill sets on the team, the author trusted the basic leadership principle that everyone wants to add value and leaders simply need to position them to do so. Massey started by rotating team members through different assignments, to learn where they performed best.

Most of my team had never participated in contracting operations in the post-award phase of operational contract support. But had I placed the burden of mission execution on those with the post-award experience, I would have induced burnout in the few with experience and lost the motivation of the rest of the team. Job title just isn't enough to go on when applying personnel resources to a problem. I had to think creatively about the skill sets that each team member brought with them and determine how to leverage that skill set in the context of our post-award contracting mission.

For example, NCOs have a great deal of experience inspecting their Soldiers to ensure proper training. That same skill translates well to making sure that a contractor's operations conformed to a performance work statement requirement. DCMA members, with experience validating the specifications of equipment coming off a production line, have a very transferable skill set of ensuring that a contractor's quality systems will generate positive results for the government.

CONCLUSION

ACC's force restructure will alter the way we provide contracting support to the force. It will also require leaders who are critical thinkers and can build teams rapidly and effectively. Revisiting basic leadership principles and applying them to a complicated problem was crucial to helping me develop an effective team capable of meeting an important operational need in Kuwait. The classroom provides us with the basic concepts, but the value of that education is in our ability to use critical thinking skills to apply those concepts to real-world challenges.

It's no longer a question of when Army leaders will have to operate under significant personnel and budget constraints—that challenge is already upon us. To succeed in this new frontier, leaders will have to fall back on some of these basic leadership principles as lines of legitimate authority are blurred, as the joint force becomes more prevalent and as we work more closely with allied partners. Contracting teams will continue to become more complex, and leaders must know how to think critically without overthinking: The solutions to the most complex leadership challenges often lie in basic leadership concepts.

For more information, contact the author at ***robert.p.massey4.mil@mail.mil****.*

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TALL-ORDER TRAINS
A double-stacked CSX intermodal train at the Central Florida Intermodal Logistics Center in Winterhaven, Florida, is ready to embark on its journey to deliver containers to customers. A double-stacked intermodal train can carry the load of 280 trucks, easing highway congestion and reducing carbon emissions. (Photos courtesy of CSX)

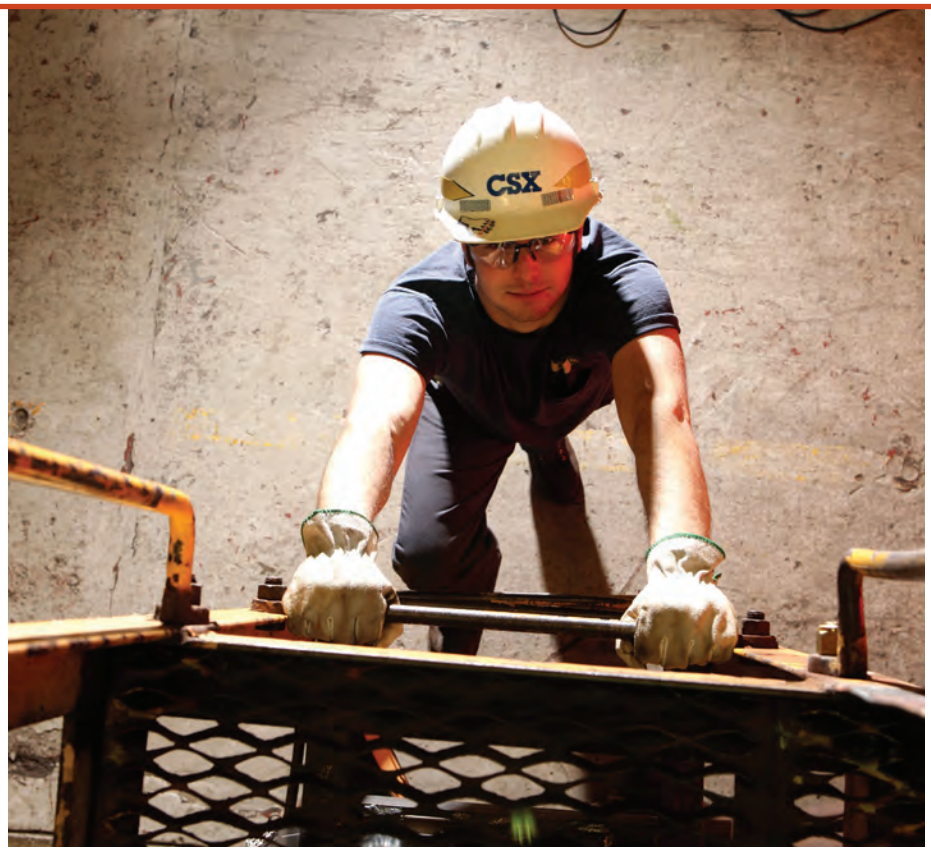
SUSTAINMENT *on the* RAILS

Cindy Sanborn
Executive Vice President and Chief Operating Officer, CSX Corp.

Like the Army, CSX has heavy equipment to maintain, from 50-year-old locomotives to cutting-edge electronics, and a large workforce to train and coordinate to accomplish this sustainment mission. Being part of this mission, and being part of the story as the railroad industry transforms, makes CSX's Cindy Sanborn excited to come to work every day.

As anyone in Army sustainment knows, it's about as complicated as a military mission can get. So many factors to consider: what materiel is needed, how much of it, for whom, between what locations and facilities does it have to move, by what means, and how fast. And that's just a small part of the sustainment picture.

You don't need to explain that to Cindy Sanborn, executive vice president and chief operating officer (COO) of CSX Corp., who has spent 28 years observing, learning and managing the intricacies of rail and, more recently, intermodal (mixed rail, truck and ship) transportation, rising to become COO in September 2015. Her life in railroading goes even further back, though—to way before 1987, when she joined CSX Transportation, the corporation's chief operating company, as an assistant trainmaster in Rocky Mount, North Carolina. Then, she was fresh out of Emory University with a bachelor's degree in computer science and economics, to which she would later add an MBA from the University of Miami.



MAINTAINING QUALITY
A CSX engineering employee inspects heavy maintenance-of-way equipment at the Bryan Park Roadway Shop in Richmond, Virginia. CSX spends nearly half its capital budget each year to maintain its critical infrastructure.

Sanborn grew up in railroading. Her mother, Marie, was a CSX secretary and administrative assistant for 32 years. Her father, Richard, was president of CSX predecessor Seaboard System Railroad and later headed Conrail (Consolidated Rail Corp.). Sanborn herself is a certified locomotive engineer.

CSX, based in Jacksonville, Florida, is now the nation's third-largest Class I railroad, a distinction that the Federal Railroad Administration applies to the country's largest and most profitable rail companies. Its transportation network encompasses about 21,000 route-miles of track in 23 states, the District of Columbia and the Canadian provinces of Ontario and Quebec.

It is Sanborn's job to ensure that CSX operations are safe, in addition to coordinating operations and service across divisions based in Albany, New York; Atlanta, Georgia; Baltimore, Maryland; Chicago, Illinois; Indianapolis, Indiana; Florence, South Carolina; Jacksonville, Florida; Louisville, Kentucky; and Nashville, Tennessee. Efficiency is paramount, but as Army sustainers know, that isn't as simple an equation as it sounds. It means not just using the right processes to get freight from point A to point B on time for multiple customers, but also making the right investments in the right rail equipment and the right people at the right time. Sound familiar?

We wanted to pick Sanborn's brain about how she and CSX balance the myriad, often competing considerations that in some ways mirror those of Army sustainers. Here is our discussion.

Army AL&T: This issue is all about sustainment. That term encompasses a wide variety of efforts beyond development and procurement, but also includes fielding, training, maintenance, general support and eventually demilitarization—all of which can be quite complex. Is there a parallel to that in the way that CSX acquires, for example, a new locomotive engine (if that's the correct terminology)?

Sanborn: Ensuring that CSX remains a premier transportation services provider requires a combination of efforts and expertise along with investment and constant focus on improvement. In this business environment, we're very focused on improving the efficiency of our rail network and the processes that help to run our business. We are committed to investing for the future, which includes our infrastructure, facilities, rolling assets such as locomotives and rail cars, and technology. We invest about $1 billion every year to maintain and upgrade our infrastructure, to ensure safe, reliable service for our customers. That includes replacing and resurfacing tracks, upgrading bridges and upgrading and rebuilding locomotives and cars.

Another part of our planning process involves ensuring adequate network

I have had—and still have—a front-row seat to the greatest transformation the railroad industry has ever seen.

capacity to move freight to serve future demand, especially as the population continues to grow and rail is even more important to the global supply chain. We're focused on building new rail yards and intermodal terminals that enable us to reach new customers, carry more freight and expand our network. We also focus on building or expanding the railroad itself, which can include new sidings for trains to safely pass each other in transit and limit congestion.

CSX has a strong procurement and supply chain department that focuses on processes and technology that allow it to analyze spending and forecast demand to maximize efficiency and keep up with customer needs. But above all, the people who work at CSX truly drive our company. We are constantly searching for talented, focused and effective people who can help our company reach new levels of success.

Army AL&T: Your company operates about 1,000 trains a day. All of those trains require people to operate them. What are your methods to ensure the safety of your workforce and that your operators are appropriately trained to

STAYING ON TRACK
A CSX engineering employee in Waycross, Georgia, supervises crews maintaining tracks. With more than 21,000 miles of track across 23 states, the District of Columbia and two Canadian provinces, CSX performs regular inspections and maintenance to ensure safe, reliable service for transporting freight to customers.

BUILDING WITH TECHNOLOGY
A CSX conductor operates a remote-control unit that switches rail cars for sorting at the Radnor Yard near Nashville, Tennessee. The remote-control box connects to a yard locomotive that pushes freight onto different tracks to build trains. Cutting-edge technology has allowed CSX to reach new levels of efficiency, safety and service.

MAINTAIN OR REPLACE?
A CSX purchasing manager inspects wheel sets at the Radnor Yard near Nashville, Tennessee. Wheel sets for locomotives and rail cars are inspected regularly and replaced when they are no longer fit for reliable, safe use. About 25 percent of CSX's workforce is dedicated to infrastructure maintenance.

deal with hazardous materials that are also critical components of our day-to-day lives?

Sanborn: At CSX, safety is a way of life. It comes first in everything that we do and is ingrained in our culture. As a leadership team, we have a responsibility to create the behaviors that allow every employee to return home to their families at night. We built that culture through intentional habits and considerable planning. At CSX we believe safety starts with individual decisions every day. That's why we begin every shift and every meeting with a safety briefing, both in the field and here at headquarters. We expect employees to uphold the same high standard of safety regardless of job function or geographic location.

We also require regular safety training and certification for our field employees, especially those who handle hazardous materials. As a common carrier, CSX is required by interstate commerce laws to transport hazardous materials, and we take very seriously the responsibility to protect the safety of our employees and the communities in which we operate. CSX is consistently an industry leader in safety, including the safe transportation of hazardous materials. Our company protocols for handling all freight, including hazardous materials, meet or exceed federal regulations and recommendations.

Additionally, our employees are empowered to stop any activity if they feel it is unsafe, and supervisors are notified immediately on such matters so corrective actions can take place. Front-line supervisors are required to perform safety observation as well as teaching and coaching employees on safety rules and procedures. This creates another layer of accountability: Each supervisor is responsible for the safety of his or her employees.

CSX's safety programs also extend beyond our workforce and operations. We recognize a great responsibility to prepare first responders and customers to safely handle rail

PLANNING FOR SAFETY
A mechanical shop manager and a welder discuss work being performed on rail cars in a shop at the Radnor Yard. CSX believes safety starts with individual decisions every day.

CSX develops employees with a combination of 70 percent on-the-job training, 20 percent coaching and mentoring and 10 percent formal instruction.

freight; CSX provides classroom and hands-on training to first responders in the communities in which we operate and to the customers who use CSX to transport their materials.

We always say that railroading is an outdoor sport, and that means we face extreme weather conditions on a fairly regular basis, from hurricanes to floods to blizzards. While we always want to continue seamless operations for our customers, employee safety is the first factor we consider when determining whether to continue operating during extreme weather events. If we can safely maintain operations during a storm, we use our safety briefings and job briefings, which are more specific to each person's duties, to make sure everyone is aware of anything out of the ordinary they might encounter. Teamwork among all departments is essential, as well as proper equipment for extreme weather events. For winter storms, we deploy our "winter action plan," which includes moving extra locomotives, on-track snow removal equipment and generators to affected areas to assist our ability to quickly recover from the storm and resume normal operations.

In a broader scope, we encourage all our employees to live safely for their families, to take their time to be safe and to look out for each other. Thanks to all of these efforts, CSX had the lowest injury rates of all the Class I railroads in 2014, even as gross ton mileage increased.

Army AL&T: How much infrastructure does CSX own and operate? How do you monitor that infrastructure, tracks and bridges and whatever else for maintenance, repairs or replacement?

Sanborn: As a company we spend nearly half of our capital budget annually to maintain our critical infrastructure to ensure that it can provide safe, reliable and efficient service for customers. Maintenance mainly involves three areas: tracks, bridges and locomotives or cars. About 25 percent of our workforce is dedicated to the maintenance of our infrastructure, with significant safety and technical training and certifications.

The CSX network includes more than 21,000 miles of track throughout 23 states, the District of Columbia and two Canadian provinces. That includes more than 16,000 bridges, required by the government to be inspected at least once per year. We meet or exceed that mandate. The track structure on bridges is inspected and monitored each week. Any

ON THE WAY TO PROFICIENCY
A new CSX employee undergoes training at the Railroad Education and Development Institute (REDI) in Atlanta. All new employees—identified by yellow hats while on site—must pass technical and safety training at REDI before returning to their local facilities for on-the-job training.

Our employees are empowered to stop any activity if they feel it is unsafe, and supervisors are notified immediately on such matters so corrective actions can take place.

issues are immediately reported and promptly addressed by our trained bridge inspectors.

We also use sophisticated technology to monitor and inspect infrastructure, including using ultrasound monitoring equipment that traverses the railroad on a regular basis. CSX has a vast network of wayside detectors that help us monitor and correct potential issues on locomotives and cars before they impact network fluidity. With thermal cameras, sensitive microphones and laser technology, we can detect unusual temperatures of the wheels and roller bearings or pick up acoustic frequencies that signal defects. We can also detect an unbalanced load or flat spots on the wheels. This diagnostic system helps minimize train stops for inspections, helps preserve rail infrastructure and ultimately helps us keep our workers, customers and communities safe.

Army AL&T: Coal has long been one of the major commodities delivered by rail. With coal use predicted to decline as a result of environmental concerns and lower prices for other fuels, in what sorts of ways is CSX looking to change and grow in the face of that decline?

Sanborn: Coal has been a historic foundation for the rail industry. Over the past decade, market forces and environmental regulations have significantly decreased the demand for coal moving on CSX. A major contributor to this decrease is the price of natural gas, which dropped dramatically in response to the significant increase in domestic production driven by hydraulic fracturing. In the past five years alone, CSX has seen coal revenue decline more than $1.5 billion. In this environment, CSX is committed to serving our diverse energy business and providing the high levels of service and efficiency our customers expect.

At the same time, we're looking at ways to reduce the structural costs and resources associated with the declining business; we have streamlined operations in the coal fields and redeployed many assets to higher-demand regions. In 2015, growth in intermodal, automotive and minerals markets helped partially offset significant declines in coal. That growth represents a transformation here at CSX: We are becoming a more service-sensitive railroad as we transport more consumer-related products. We have developed "voice of the customer" surveys and meetings, which provide us with direct feedback and ideas about how to improve our service product and continuously improve our customer engagement and communication. We're continuing to invest in expanding our intermodal services, including by

LOOKING OUT FOR TROUBLE
A CSX conductor climbs a hopper rail car for a better view of the Radnor Yard as he works to build the next train near Nashville, Tennessee. At CSX, every shift and every meeting begins with a safety briefing.

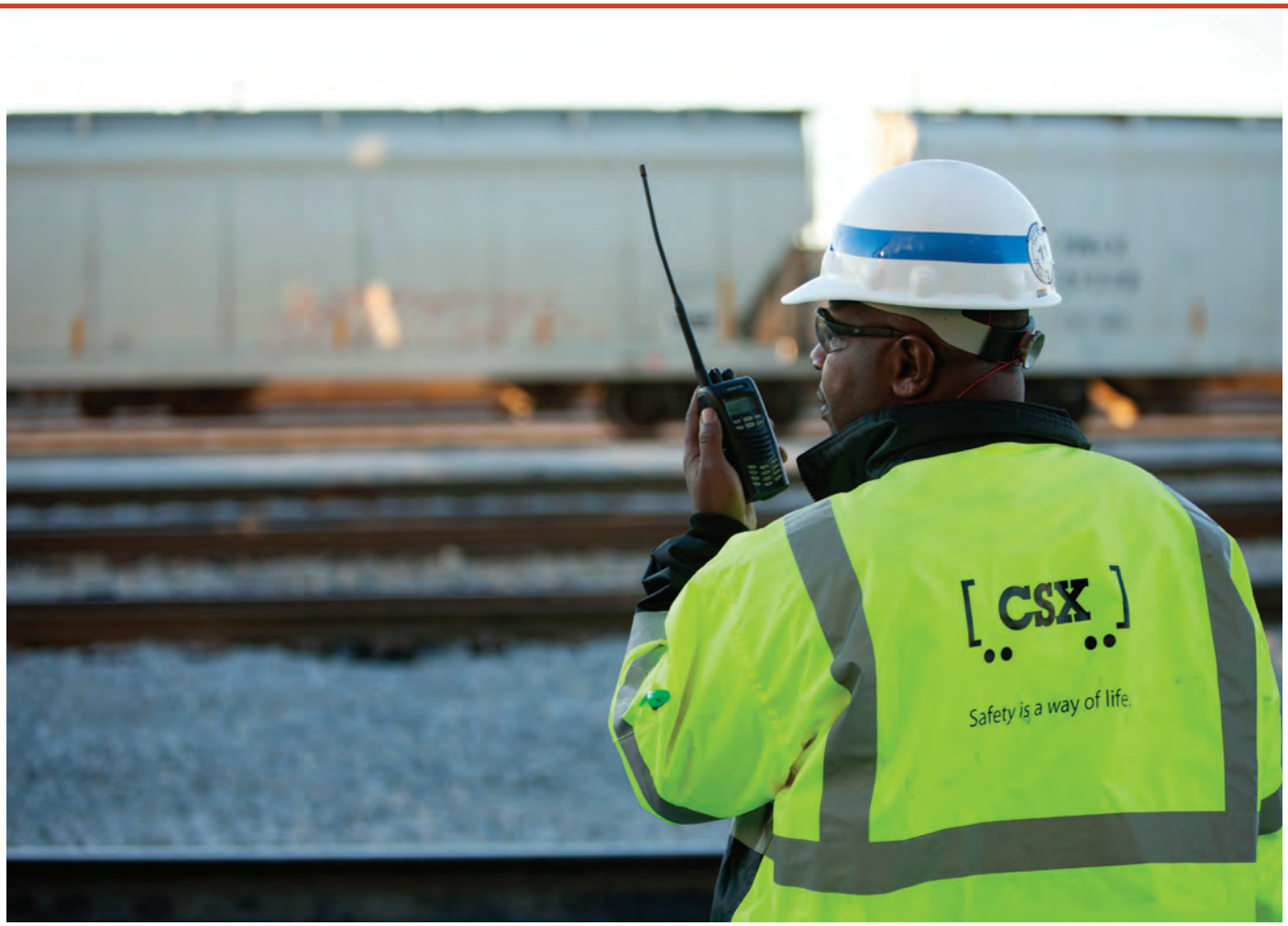
developing new terminals and rail service that will more efficiently connect mid-Atlantic ports to consumption centers in the Ohio Valley and Midwest.

Army AL&T: Are there specific science, technology, engineering and math (STEM) efforts that CSX has undertaken to increase its reserve of workforce "seed corn" or the numbers of women in key positions, either at CSX itself or within the industry?

Sanborn: At CSX, we've worked hard to develop a pipeline of talent to meet business demands, because we recognize that people are our competitive edge. We're focused on hiring people with a variety of education and work experience, including people versed in the STEM disciplines. To attract such highly qualified individuals, CSX strives to create a diverse, engaged workforce, which helps us reflect the values and perspectives of the communities in which we operate.

We are particularly focused on attracting more women with STEM backgrounds, and that effort begins with partnering with schools at all levels. In addition to expanding our college recruiting programs, we're partnering with other businesses to increase funding for and access to STEM education. For example, we're joining forces with other business leaders in our headquarters region to foster a Northeast Florida STEM hub focused on accelerating the growth of education and careers in STEM fields. We also partner with City Year [an AmeriCorps program whose members serve as full-time tutors, mentors and role models in many of the nation's highest-need elementary, middle and high schools] to pair employee mentors with at-risk students to keep them in school, an important first step in expanding the pool of qualified employees.

Another way we attract talented employees is by offering extensive training opportunities that help our employees constantly learn and grow. CSX develops employees with a combination of



PREPARING FOR THE FUTURE
A CSX mechanical shop employee coordinates the movement of rail cars that must be transferred into the mechanical shop at the Radnor Yard near Nashville, Tennessee, for maintenance and repairs. Part of CSX's planning process involves ensuring adequate network capacity to move freight that will serve future demand.

70 percent on-the-job training, 20 percent coaching and mentoring and 10 percent formal instruction. This model allows CSX employees to develop the skills they need to be effective in their current roles, and it provides opportunities to keep learning and challenging themselves as individuals. We also are committed to developing the next generation of leaders within our ranks, through our technical and leadership career paths. In 2014, we filled 75 percent of open management positions internally.

Additionally, a large portion of our workforce has military experience. One in five CSX employees has served in the armed forces, and 27 percent of the people we hired in 2014 were veterans. We find that the demands of many positions here at CSX often align with skills gained through military experiences—leadership, determination and a team mentality.

Army AL&T: It seems the locomotives of the future are very "smart"—jampacked with sensors and processors that improve performance—but would seem to present challenges. For example, training a workforce as new equipment comes online or is upgraded, maintaining electronics and software, and maintaining a fleet with both old and new locomotives. How is CSX addressing or planning for these challenges?

Sanborn: Locomotive technology has been evolving constantly since the railroad began. Contemporary locomotives not only drive our rail network, they also serve as data and communication platforms. Our workforce is well-accustomed to learning new technology and maximizing its benefits in their daily lives. Our current fleet includes about 4,000 locomotives, and we are constantly updating them to take advantage of advances in technology and efficiency. For example, we worked with

With thermal cameras, sensitive microphones and laser technology, we can detect unusual temperatures of the wheels and roller bearings or pick up acoustic frequencies that signal defects.

General Electric to develop and install Trip Optimizer, a cutting-edge software that informs a train engineer when to adjust the throttle to maximize fuel efficiency. We also installed Event Recorder Automated Download (ERAD) technology, an onboard computer that applies latitude and longitude to each second of train-handling event data. The data from the ERAD is downloaded to data centers at CSX and used to diagnose locomotive issues and provide information about safe handling of the locomotive during its trip. The data also allows for quantitative feedback on the engineer's performance, once again maximizing fuel efficiency, improving handling and reducing more intensive training for engineers. The data collected from ERAD also helped us build a lifelike simulator, which we use to train engineers at our Railroad Education and Development Institute in Atlanta. We also partner with major suppliers at our locomotive facilities; they have technical advisers on site to help train employees and troubleshoot locomotive issues. Thanks to all these technological advances, our fuel efficiency has improved 100 percent since 1980.

Most locomotives have a useful life of between 30 and 50 years. As we purchase new locomotives and rebuild older units, we usually put them into service on our longer routes to maximize the benefits of their fuel efficiency and new technology. Some of our older locomotives are retrofitted with new technology, including microprocessors and multiple smaller diesel engines, which allow them to be even more fuel-efficient by only using the power necessary to complete the task at hand. We also often use older locomotives for local service, running short loops from a large yard to individual customer facilities, or in service within our rail yards.

Army AL&T: In an essay published April 18, 2011, by Women Worth Watching, you said that you had had "the privilege to work with people at all levels of the organization, which has taught me that a team-focused approach creates a whole that is greater than the sum of its parts." This force-multiplier principle of teamwork is also central to the Army's workplace culture. What are the three

NEW HORIZONS
A CSX employee sorts rail cars by their destinations and assembles trains at the Radnor Yard. CSX is focused on building new rail yards and intermodal terminals that will enable it to reach new customers, carry more freight and expand its network.

SPECIAL HANDLING
A CSX train carries heavy military equipment atop flatcars through the mountains of North Carolina. CSX provides classroom and hands-on training to first responders in the communities in which it operates and to the customers who use CSX to transport their materials.

most important things to remember in trying to establish a culture of teamwork?

Sanborn: At CSX, one of our core values is "People Make the Difference." We value every employee and we want them to be engaged with each other, with their leaders and with the community. We emphasize professional and personal growth among our employees, which is why we offer opportunities such as extra training, leadership development and tuition reimbursement for going back to school. We expect a lot from our employees, but we also celebrate their success, and we believe that creates a work environment where people feel empowered and supported. This kind of atmosphere is especially essential for people who work in an environment where safety is paramount and a poor decision can result in serious injury or worse.

Precision is another important element of teamwork here at CSX. Delivering the high level of service that our customers expect demands accurate, verified data to achieve definitive results. This is why another of our core values is being fact-based. When everyone is using the same rubric, our efforts and outcomes easily align.

Collaboration is the heart of teamwork. CSX employees come from all types of backgrounds and have all types of experience. All of those diverse perspectives are important to consider in finding innovative solutions. We expect our employees to treat each other with respect and dignity, and we encourage the development of new ideas that help our company improve outdated processes and become more successful.

We find that the demands of many positions here at CSX often align with skills gained through military experiences—leadership, determination and a team mentality.

Relationships matter. Working together for a common cause is a binding experience that lasts for years. Whether it be for safety or service, we have a winning team.

Army AL&T: You've been with CSX a remarkable 28 years, even though your education and experience could open doors to many other jobs in both the private and public sectors. Retention is a topic of great concern in the Army civilian workforce, with a large number of the most senior, most skilled civilians on the verge of retirement. What is it about CSX that has kept you there all this time?

Sanborn: Railroading is in my blood. Both my father and mother were railroaders, and I grew up with a clear understanding of the importance of the railroad industry. However, my own career and experience within this industry have given me a unique perspective. I have had—and still have—a front-row seat to the greatest transformation the railroad industry has ever seen. I have seen it adapt and blossom into a thriving economic force with streamlined, customer-focused service. More recently, cutting-edge technology has empowered CSX to reach new levels of efficiency, safety and service. And that aspect of our business will continue to grow and expand into exciting new arenas. Playing an important role in this compelling narrative is reason enough to come to work every day. I have the added bonus of being surrounded by incredible leaders, who challenge me to think differently and motivate me to push forward.

Army AL&T: How big is intermodal going to be? How much is CSX focused on it?

Sanborn: Intermodal is one essential component to our business that allows CSX to reach new customers. With a growing population demanding more goods, and global supply chains stretching longer, intermodal is an important part of the nation's ability to serve increasing demand. By using trains, trucks and ships for different portions of a freight move, we're able to maximize supply chain efficiencies, reduce transportation costs and expand our customers' reach into new markets. It is estimated that there are about 9 million truckloads moving around the East that would be good candidates to convert to intermodal service—which usually means they're moving 550 miles or more by truck. A train can carry one ton of freight more than 470 miles on a single gallon of fuel, which makes rail about four times more fuel-efficient than trucking. To further improve efficiency, we're also focused on building a network that can handle double-stack intermodal service, which means stacking two intermodal containers on top of one another on a rail car. In this way, we can move twice as much freight on the same train—improving the efficiency for customers, reducing emissions and helping reduce highway congestion.

Over the past several years, investments in our intermodal network have allowed us to grow this business significantly; in the fourth quarter of 2015 alone, we saw domestic intermodal traffic increase by 14 percent over 2014. We recently expanded our Northwest Ohio intermodal hub terminal, which has been integral to our ability to serve smaller- and medium-sized markets that would not traditionally have generated enough business to attract intermodal service.

We also broke ground on a new Pittsburgh intermodal terminal in 2015, which will provide another efficient landing place for freight coming through the mid-Atlantic ports on their way to the Ohio Valley consumption markets. We also began construction on the Virginia Avenue Tunnel project in Washington, D.C., which has been a major freight and commuter pain point on the East Coast. Once the tunnel is rebuilt to handle double-stack intermodal service, the percentage of CSX's network that can handle double-stack intermodal will be in the mid-90s, creating long-term opportunities.

As energy and manufacturing markets shift here in the United States and globally, intermodal is helping CSX adapt to stay competitive. We're transforming into a transportation company that serves a more diverse set of customers, including more consumer-driven products and industries. And intermodal is an essential component of our plan to not only reach new customers but also provide a high level of service and efficiency. ?

SPOTLIGHT:

MS. SHEILA KNOTT

Looking forward, with an eye on the bottom line

MS. SHEILA KNOTT

COMMAND/ORGANIZATION:
Joint Air-to-Ground Missile Product Office, Joint Attack Munition Systems Project Office, Program Executive Office for Missiles and Space

TITLE:
Operations research analyst, series 1515

DAWIA CERTIFICATIONS:
Level III in business – cost estimating, business – financial management and program management

YEARS OF SERVICE IN WORKFORCE: 11

EDUCATION:
B.S. in mathematics, University of Montevallo

AWARDS:
Superior Civilian Service Award

Sheila Knott, a native Alabamian who's spent her career at Redstone Arsenal, says that, as a numbers person, she's a rule-follower by nature. "As a coster, my personality is: 'There's a right answer, and a right way.' I think a lot of people driven into doing numbers tend to be like that." She once aspired to teach high school math but had a change of heart after student teaching, and took an internship that led to a job with the defense engineering division of a Huntsville, Alabama, manufacturing company.

Now she uses her background in math to estimate the true, full cost of programs and systems—from development through sustainment. As a program progresses from concept to product, cost estimators ("costers") have to defend their estimates. In August 2015, Knott won the Superior Civilian Service Award for her work supporting the Milestone B decision for the Joint Air-to-Ground Missile, which included a defense of her team's estimate in the pre-milestone working group.

What do you do, and why is it important to the Army or the warfighter?

I serve as an operations research analyst and adviser in the area of cost analysis, estimating and evaluation, and system analysis, for tasks relating to the development, acquisition, deployment and operation throughout the entire life cycle of the Joint Air-to-Ground Missile, a product under the Joint Attack Munition Systems (JAMS) Project Office. The ultimate product of my work is a life-cycle cost estimate, which provides the cost of developing, procuring, fielding, supporting and sustaining missiles in support of the warfighter. This allows decision-makers to compare the costs of different systems and decide which provide the best benefit to the Soldier.

How did you become part of the Army Acquisition Workforce, and why?

I started out at a defense contractor. For 12 years, I worked for different defense contracting companies, mostly on program integration, documentation review and prep work. So I learned about the acquisition life cycle by reviewing documentation. Later I worked with system integrators, doing anything and everything that needed to be done. Bill Ruta, a system integrator who I supported for a Milestone B decision, eventually offered me the opportunity to become a civilian employee. He became deputy project manager at JCM (Joint Common Missile, which later merged with air-to-ground missiles to become the JAMS office), and suggested I apply when there was a job opening. Being a civilian employee allows me to play a small role in getting a better weapon to the Soldiers in the field.

What do you see as the most important points in your career with the workforce, and why?

Transitioning from contractor to civilian employee was the biggest turning point in my career. As a civilian employee, the most important point has been the 1515 series—a designator for federal employees in operations research, which requires substantial coursework in mathematics—being labeled as a critical skills labor category in March 2009. That meant that now I'm in a job series that allows me to advance to GS-14 without supervisory requirements. There are not many jobs in the government where you can rise to that level without supervising people.

Can you name a particular mentor or mentors who helped you in your career? How did they help you?

As a defense contractor, I had the great experience to learn so much about the DOD acquisition process—how all the functional areas come together to create a product and the importance of dedication to one's work—from so many other contractors, civilian employees and military leaders. Mr. Rick Curns, president of Opdec Inc.; Mr. Rusty Borman, senior consultant for the Missile Defense Agency (MDA); Mr. Bill Ruta, project manager for Close Combat Weapon Systems; Mr. Carlton Brewer, Huntsville general manager and vice president for 5-D Systems Inc.; and Dr. Jose Martin, chief engineer within the MDA Targets and Countermeasures Program, top the list of my mentors while working as a contractor.

As an Army civilian, I have the pleasure of serving at JAMS under Mr. Bill Knox, the business management director, and Ms. Dawn Wood, the Cost Analysis Division chief. They both have provided tremendous knowledge, support, patience and opportunities to excel while I was transitioning from program integration as a contractor to the cost world as a civilian employee.

Since my career has been spent at Redstone Arsenal, I have also had the pleasure of working for great military leadership. This includes COL Rob Barrie, project manager for cargo helicopters in the Program Executive Office for Aviation, COL Ron Volkin of the MDA and LTC Phil Rottenborn, product manager for the Joint Air-to-Ground Missile Product Office. They have taught me the importance of trusting your team members and giving positive feedback. All of my mentors have set the bar high as excellent employees and stewards of the taxpayers' dollars, and always exemplifying a strong work ethic. It has been a challenge not to consider myself a failure when I compare myself to the example they have shown.

What's the greatest satisfaction you have in being a part of the workforce?

It's a moment I'm still looking forward to: when my product gets to the Soldier and hits the target for the first time. Can't wait! HOOAH!

As a program, we've been terminated and had our name changed and been merged with others, so we've been in the development phase longer than we intended. But we just had a successful Milestone B decision, and now we're looking forward to getting something fielded by 2018.

What advice would you give to someone who aspires to a career like yours?

Be a sponge and absorb as much as you can. Learning how all the pieces come together has been a huge part of my career. I was extremely fortunate to have been exposed to the acquisition process prior to becoming a member of the cost community. It is not enough just to know cost. Having an understanding of all the functional areas and a basic knowledge of the system is essential to building a cost estimate.

Another lesson I have learned along the way is that having good communication skills is essential. Take all the training and classes on communication that you are offered. Building a cost estimate requires one to communicate with all the functional areas. Being able to express what you need and understanding what you have been given to put into your estimate allows you to be able to articulate your final product.

—MS. MARY KATE AYLWARD

PGK PREVIEW

PFC Nathaniel Pounds, left, and PFC Rudolfo Lechuga, both cannon crew members assigned to Field Artillery Squadron, 2nd Cavalry Regiment, prepare to fire a M777A2 howitzer during an artillery demonstration at Grafenwoehr Training Area, Germany, in July 2015. After an initial competition, PEO Ammunition down-selected to a single contractor and decided to use clean-sheet analysis before making a full-rate production decision on the precision guidance kit for the projectiles fired from the M777A2. (U.S. Army photo by SGT William A. Tanner)

Cost Savings *from the* Bottom UP

A technique called 'clean-sheeting' lets project managers work from the ground up to hunt for cost savings when dealing with a sole-sourced product with proprietary technical data.

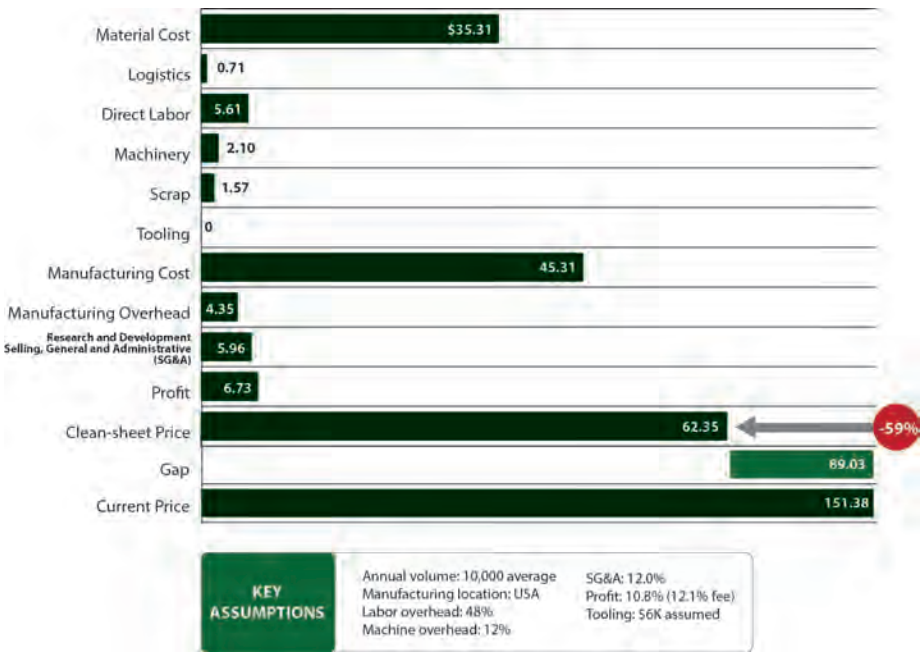
by MAJ Kenneth B. Fowler and Mr. Robert E. Steere III

How do you know you're paying what you should be paying for a state-of-the-art, first-of-its-kind product, particularly if it's being produced in a sole-source environment from a proprietary technical data package?

The Product Manager for Guided Precision Munitions and Mortar Systems (GPM2S) faced this question regarding the M1156 Precision Guidance Kit (PGK). Although the product manager employed traditional cost-estimating techniques to develop and update the program office estimate, whether the government was paying the right price remained uncertain because the unit production price was higher than the initial estimate. To answer this question, the product manager employed a bottom-up technique known as "clean-sheeting" to better understand the cost of the PGK and to identify opportunities for cost savings.

Similar to the engineering cost-estimating method, when you build an estimate of what an item will cost based on the price of the subcomponents plus assembly, clean-sheeting serves as an unbiased, versatile tool to assist with these types of strategic decisions. In many cases, actual product costs aren't clear, and suppliers are rarely comfortable revealing all data associated with their manufacturing processes and costs. A clean-sheet provides a cost estimate that develops an optimal "should cost" or "could cost" by modeling both material-related and non-material-related costs in an optimized manufacturing scenario. The

FIGURE 1



SAMPLE COMPONENT CLEAN-SHEET

This clean-sheet chart shows that the current price of a sample component is 59 percent higher than it could or should be, assuming the best possible production rates and material costs. To determine this percentage, clean-sheet analysts start from the bottom up, building the item from scratch. (SOURCE: Robert Steere, PM CAS)

assumptions in the model are based on industry standards, world-class processes and competitive pricing to produce the best possible should-cost potential for the design. The model also compares the should-cost to the current cost to identify cost gaps, which can be seen as opportunities for future reductions.

The goal of clean-sheeting is not to uncover the ultimate truth in numbers, nor to provide all information required for an accurate estimate. Instead, clean-sheeting provides cost transparency to help identify material savings, opportunities and profit, as well as new ideas for design and process improvements, such as a different process flow, manufacturing footprint or production technology.

Picatinny Arsenal, New Jersey, is the home of Product Manager GPM2S, a subordinate organization of the Project Manager for Combat Ammunition Systems (PM CAS) in the Program Executive Office (PEO) for Ammunition. PEO Ammunition is responsible for life-cycle management across all ammunition families with a mission of developing, equipping and sustaining lethal armament and protective systems enabling joint warfighter dominance.

After an initial competition, the PGK program selected one prime contractor, which was later awarded a sole-source production contract. PEO Ammunition selected the PGK program for the clean-sheet process, and the information from the clean-sheet informed the full-rate production decision and acquisition strategy; as an expensive product obtained from a sole source, PGK is a good candidate for the ground-up analysis of clean-sheeting to make sure the government is getting its money's worth.

PGK DETAILS

The PGK is a GPS-based trajectory-correcting system with fuzing functions that provides near-precision capability for 155 mm conventional, high-explosive artillery projectiles. It is screwed into the fuze well of the M795 or M549A1 high-explosive projectiles and fired from the M777A2 Lightweight Towed Howitzer or M109A6 Paladin Self-Propelled Howitzer. The fuze can function in proximity or point-detonating mode, with a demonstrated "circular error probable" of less than 30 meters—which means that when rounds are fired, at least half land within 30 meters of the target (See Figure 3 on Page 109.) The PGK possesses a safety feature that will render the projectile inert if it is not going to hit close to its assigned target.

PGK attained urgent material release in March 2013 and was fielded to limited Army field artillery units shortly thereafter. PGK attained full material release in December 2015 and is currently being fielded to all Army field artillery units.

THE CLEAN-SHEET PROCESS

The first step of the clean-sheet process is to visualize the product manufacturing flow. Then the required raw materials and processes are identified. The third step is to allocate resource costs for material, labor and equipment. Finally, overhead costs are added to the model; these include the indirect resources needed to run plants, the amortization of one-off investments in research and development, equipment and tooling, and the effects of

FIRST OF ITS KIND
PFC Brent Rhodes, a cannon crew member assigned to Field Artillery Squadron, 2nd Cavalry Regiment, fires an M777A2 howitzer system during the first firing of a PGK-enabled artillery system in Germany, near Grafenwoehr, in July 2015. Using clean-sheet analysis—a kind of should-cost analysis that delves into why an item should cost what it does—helped PEO Ammunition ascertain that the government was paying the right price for this sole-sourced capability. (U.S. Army photo by SGT William A. Tanner)

currency exchange and taxes. The more detail included in the model, the more useful it is. This creates more opportunities to improve processes and design and provides compelling leverage when negotiating with suppliers.

Obtaining data to perform a clean-sheet analysis can be challenging. Therefore, a well thought-out strategy must be developed early in the effort to obtain a complete set of parts for analysis, gain visibility into major components, contractor cost and pricing data, and build processes. Nondisclosure agreements will ensure that contractors' confidential and proprietary information is protected. Funding must be allocated if a consultant will be used. Various components of the product also may need to be torn down and analyzed in order to determine raw material and manufacturing processes that contribute to unit cost.

Clean-sheeting is an intense process requiring time, resources and subject-matter expertise. To be successful, the government must build an integrated project team to lead and support the clean-sheet effort. This team must have a dedicated government team lead and, at a minimum, consist of financial analysts, engineers and product subject-matter experts. Partnering with a third-party consultant to provide manufacturing and modeling expertise can be beneficial. Participation by the prime contractor is essential to understanding the design and manufacturing process.

OUTPUT YIELDS INSIGHTS

The clean-sheet provides insight on costs at both the component and final assembly levels. Figure 1 shows a gap between the clean-sheet should-cost price and the current price, as well as the various costs included in the clean-sheet price.

Figure 2, on Page 108, dives deeper into details of the cost gaps. With the knowledge obtained from clean-sheeting, the PM has the insight to make better-informed decisions on the program's acquisition strategy, as well as to develop better positions in future negotiations. In addition, the knowledge gained from the clean-sheet process can be leveraged to identify opportunities to comply with Better Buying Power initiatives—including "achieve affordable programs," "achieve dominant capabilities

FIGURE 2

CLOSING THE GAP

A clean-sheet not only finds a gap between the actual price and the should-cost price, but can also determine why that gap exists. Because the clean-sheet model assumes the best possible conditions, and it's not always possible to enforce those, the whole gap might not be able to be closed. But this clean-sheet identifies three opportunities to narrow the gap. (SOURCE: Robert Steere, PM CAS)

while controlling life cycle costs" and "eliminate unproductive processes and bureaucracy"—and achieve savings for the government.

CLEAN-SHEETING AS A BEST PRACTICE

The best times to conduct a clean-sheet are in the operations and support phase of the acquisition life cycle, and again during low-rate initial production (LRIP). Unlike the parametric and analogy cost-estimating methods typically used early in development, clean-sheeting is specific to a product's design. (Parametric estimating uses historical information; analogous methods are used to estimate project cost when little detail about the project is available.) As such, clean-sheeting cannot be effectively employed until the product's design and manufacturing processes are stable. Implementing the clean-sheet process during LRIP provides great insight for the full-rate production acquisition strategy, identifying cost-saving initiatives and planning for future negotiations. Ideally, the product manager and prime contractor work together to pursue cost-saving opportunities identified through the clean-sheet process.

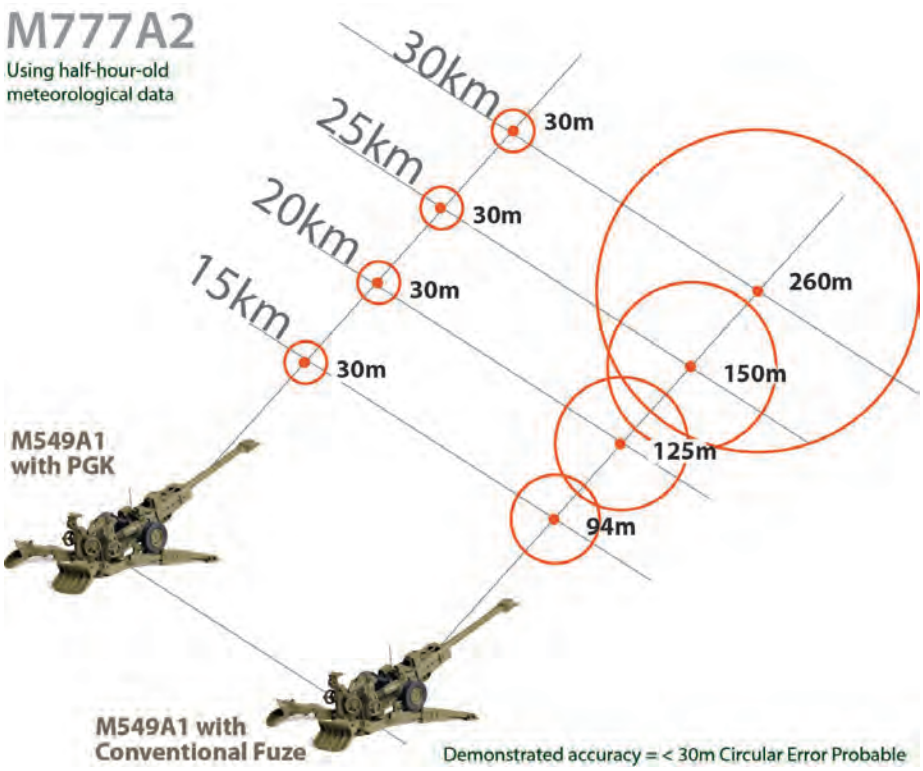
The product manager should consider contract vehicles that create incentives for the contractor to reduce costs in production, such as a fixed-price-incentive, firm contract that shares savings with the contractor. A clean-sheet review during LRIP enables the government to address potential cost savings as early as possible, once the final product design is established and in production.

Clean-sheeting should be considered a best practice to understand and control costs in production. It would be a mistake, however, to conclude that it can be done repeatedly or effectively without a significant organizational commitment.

It is not a rebranding of the existing cost-estimating techniques. Rather, it is a true bottom-up approach that requires in-depth knowledge not only of the product, but also of world-class manufacturing processes, from raw materials to the end product, along with detailed accounting knowledge to properly understand indirect costs throughout the supply chain. The government has most of the subject-matter expertise to do this analysis in the research and development centers, acquisition centers and PEOs. But bringing this capability together in a coordinated, repeatable way is a significant challenge for a PM.

To conduct an accurate clean-sheet, PEOs must be prepared to maintain a dedicated team that will identify, gather, analyze and review the required data from government and contractor records. This team must have the resources and leadership emphasis to work thoroughly and quickly in support of program milestones. Weekly in-process reviews and frequent updates to organization leadership should be conducted to keep the project on track.

FIGURE 3



COMPARING ACCURACY
With PGK, projectiles fired from a howitzer land closer to the target more frequently. So it's highly valuable—but a clean-sheet helps answer just how valuable, and at what cost. (SOURCE: Robert Steere, PM CAS)

A NEGOTIATING TOOL

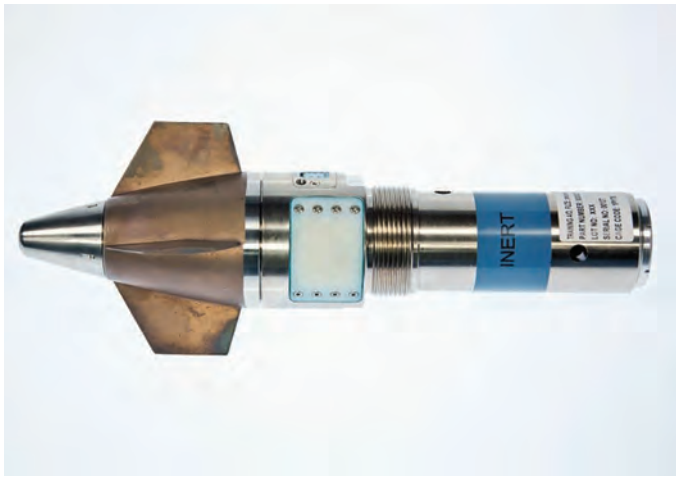
One of the benefits clean-sheeting provides the government is that it identifies areas of opportunity for cost-saving initiatives and can be used to develop strategies for future procurements. Clean-sheeting provides insight into the best possible could-cost for a given design, which can serve as a cost target for the government-contractor team to work toward. Another benefit is the ability to modify assumptions within the model and explore the effects of different production scenarios.

Armed with the clean-sheet analysis, Product Manager GPM2S is preparing for the next negotiation with the prime contractor. By sharing the component clean-sheets with the contractor, Product Manager GPM2S is confident that the cost of sub-vendor component parts can be lowered and that the negotiations should yield cost savings. Looking further in the future, PEO Ammunition is discussing whether to continue working with a contractor who specializes in clean-sheeting or bring the capability in house.

CONCLUSION

Upon the completion of a clean-sheet, the government is armed with most of the data required to identify the specific should-cost or could-cost. Although it

PGK WITH CANARD COVER
As a sole-sourced, first-of-its-kind product, the PGK—shown here with canard cover—was a good candidate for clean-sheet analysis, which lets the government understand the cost of an item from each component up. Without that understanding, the manufacturer has a lot more leeway to set the price higher. (Photo courtesy of Product Manager GPM2S)



WHY PGK?
The GPS-enabled PGK attaches to explosive projectiles, using one component—its canards—to guide the projectile toward its target and make minor corrections. Clean-sheeting requires analysts to know what purpose each component serves and how it's manufactured and to stay updated on best practices and pricing data—a challenge in budget-constrained times. (Photo courtesy of Product Manager GPM2S)

may not account for all variables, a clean-sheet provides a valuable estimate of the production cost of an item under a specified set of assumptions.

Despite the benefits of clean-sheeting, challenges exist. It is a labor- and time-intensive process, requiring a diverse team of experts with extensive knowledge and resources to conduct the analysis. It also provides an aggressive estimate that initially assumes ideal processes and pricing. For example, initial analysis is based on top-quartile industry standards and market pricing for materials that may not reflect reality or the present state of the situation or program. It assumes mature processes and efficient production volumes, when in reality the processes and teams may be new or inexperienced.

In addition, low production levels and no guarantee of future orders may limit a prime contractor's ability to procure materials in efficient volumes, and not all data required for an accurate clean-sheet is easily accessible or readily available.

Finally, a comprehensive database of manufacturing industry standards is required and needs to be maintained by the clean-sheet contractor, who pulls the information from subscription websites. Most importantly, at the end of the clean-sheet process, it is imperative for the PM and the contractor to analyze and understand the gaps, determine what portion of the gaps can be closed, implement applicable recommended practices and work throughout the supply chain to bring "current cost" closer to "should cost."

For more information, contact MAJ Kenneth B. Fowler at ***Kenneth.b.fowler4mil@mail.mil****.*

MAJ KENNETH B. FOWLER is the PGK assistant product manager for PM CAS, Picatinny Arsenal. He holds a B.S. in criminal justice from South Carolina State University. He is Level I certified in program management and a Lean Six Sigma black belt.

MR. ROBERT E. STEERE III is a project management officer within PM CAS at Picatinny Arsenal. He is Level III certified in engineering, Level III certified in production, quality and manufacturing, and a Lean Six Sigma green belt. He has a B.S. in mechanical engineering from the University of Rhode Island and holds nine U.S. patents.

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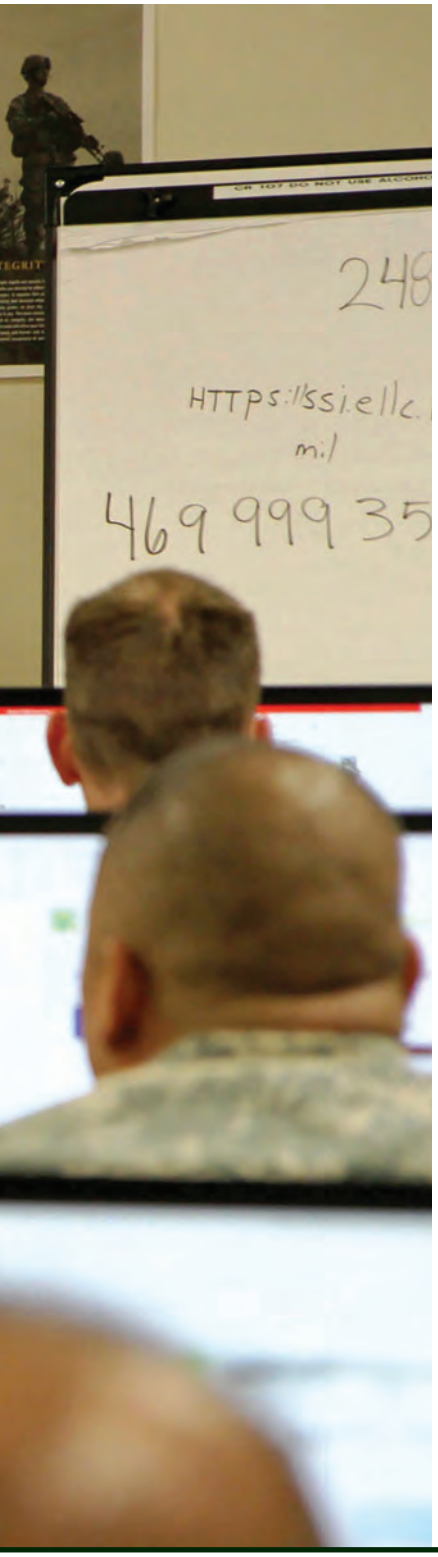
HEAD OF THE CLASS

SFC Marion Fox instructs his fellow classmates as part of his training for Phase 1 of the 94th Training Division's Finance Senior Leaders Course, held in November 2015 at Fort Dix, New Jersey. Fox was explaining the finer points of master data elements in the Defense Travel System and GFEBS. (U.S. Army photo by SFC Phillip Eugene)

BETTER to BEST



Six Army programs arrived at a single enterprise resource planning solution independently, then turned better buying power into best buying power by working together to bring the licensing costs down for the unexpectedly popular software.

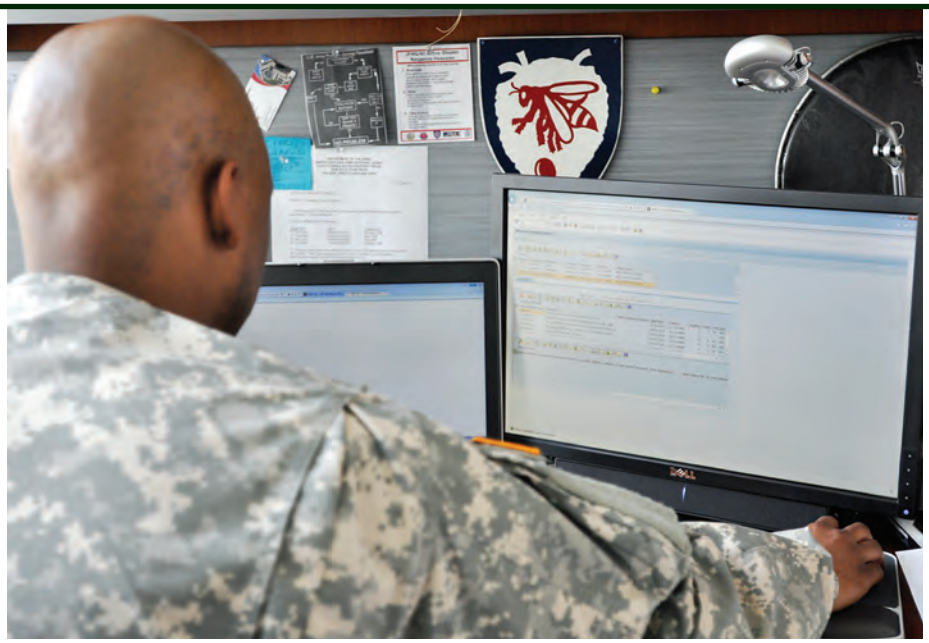
by COL Harry Culclasure and Mr. Thomas Neff

Category management is a growing trend in today's marketplace that focuses on the way companies and organizations consolidate contracts, leverage buying power and drive consistent purchasing practices. For a private company with one mission and one pool of money, category management seems straightforward enough; however, for DOD, specialized requirements and initiatives funded with different types of money (for example, procurement, research and development (R&D) and operations and maintenance (O&M) dollars) make category management a major challenge.

By embarking on a unique contracting strategy to buy SAP enterprise resource planning (ERP) software licenses for users to modernize their solutions and execute the business processes using the best planning and management tools, the Army is using an innovative approach to category management, thus turning better buying power into best buying power for six of its ERP programs.

A NEW WAY OF DOING BUSINESS

Under the direction of the Program Executive Office for Enterprise Information Systems (PEO EIS), ERP software, which consists of a set of integrated applications, has transformed the way the Army does business by creating a unique enclave of shared data, detailed reporting, improved asset tracking and financial auditability. This



INSTRUMENT HANDLING
SSG Christopher McKinnon, the 440th Army Band (AB) supply sergeant, conducts logistical operations using the GCSS-Army program at his unit in Raleigh, North Carolina, in May 2015. The 440th AB is one of the first Army National Guard (ARNG) units trained in the new Army logistics program. (ARNG photo by SFC Craig Norton, 382nd Public Affairs Detachment)

powerful environment is enabled by SAP's commercial off-the-shelf ERP software platform, which in turn enables the programs to:

- Improve the management and tracking of tactical-level supplies and equipment (Global Combat Support System (GCSS) – Army).
- Standardize financial management (General Fund Enterprise Business System (GFEBS)).
- Fully integrate national-level supply support (Logistics Modernization Program (LMP)).
- Improve data sharing and integration (Army Enterprise Systems Integration Program (AESIP) Hub).
- Support the environment (Headquarters Army Environmental System).
- Enhance project management (eNOVA).

These systems are integral to Army operations worldwide and represent an enormous volume of business conducted by nearly 200,000 users. For example, LMP alone manages $19 billion in inventory, processes 7 million transactions daily and interfaces with more than 80 DOD systems. Three of the six ERP programs are Acquisition Category I major automated information system programs and represent a combined $10 billion investment over nearly two decades.

SELECTING, MANAGING REQUIREMENTS AND VENDORS

Before 1999, the Army procured numerous, independent software applications to separately manage specific missions, such as finance, national-level logistics and tactical-level logistics. With those systems becoming outdated, the Army made a strategic decision in 1999 to begin migrating to a modern, off-the-shelf ERP platform to transform its business operations. Over several years, each of the Army's logistics and financial ERP programs evaluated different software platform solutions. Based on its ability to provide a variety of capabilities, as well as the company's extensive experience supporting DOD and its unique requirements, all six programs selected SAP, separately awarding over 20 contracts to purchase more than 50,000 licenses and maintenance packages from SAP and its licensed resellers.

In 2011, the Army recognized that it would need approximately 80,000 additional licenses over the next four years. With that, AESIP recognized a significant category management opportunity to bulk-buy SAP licenses to save the government millions of dollars and streamline support for ERP users across the programs. AESIP established an SAP integrated product team (IPT) with the Computer Hardware, Enterprise Software and Services (CHESS) program office and the Army Contracting Command – National Capital Region (ACC-NCR). In partnership with the SAP IPT, ACC-NCR awarded the first SAP enterprise license agreement (ELA) by employing industry best practices, including category and requirements management, relationship management and demand management to obtain the best pricing and terms available.

Over the course of the SAP ELA 1, from 2011 to 2015, programs made larger-than-expected purchases to take full advantage of the favorable pricing and terms and, as a result, reached the contract ceiling nearly two years earlier than planned. It was evident that the Army needed a new contract to manage the ERP programs' software requirements through 2020 to support continued fielding of new and expanded SAP functionality across the enterprise. This follow-on contract

became the SAP ELA 2, which addressed emerging ERP requirements, such as enterprise aviation, business intelligence/business warehouse, Army prepositioned stock, ammunition management and shop floor automation, and included annual maintenance renewals, as well as the ability to purchase 181,000 additional licenses.

At the start of the SAP ELA 2 acquisition process, an expanded SAP IPT was established with new representatives from each program and the contracting community, including Army Contracting Command – Rock Island (ACC-RI), Illinois. This new IPT faced three main challenges—ensuring continuity in software maintenance for existing licenses; obtaining the best price for software licenses to meet each ERP's growth and demand, and to support each program's fielding schedule within budget; and accelerating the contract procurement to eight months from the average 12 to 18 months it normally takes for this type of acquisition. The SAP IPT had to overcome these challenges to mitigate the potential risks of cost overruns and schedule delays.

A SOFTWARE TRANSFORMATION
ERP software represents a dramatic change in the way the Army does business, consolidating systems for data sharing, reporting, asset tracking and financial auditing. (SOURCE: U.S. Army Acquisition Support Center)

LEVERAGING BUYING POWER

Traditionally in government procurement, programs manage their own funding, IT inventory and mission requirements. However, through the use of CHESS ELAs, the Army has achieved significant cost savings of nearly $110 million and business efficiencies across the board. In the instance of the SAP ELA 2, the Army ERPs have been able to leverage buying power to negotiate approximately 51 percent discounts, streamline the acquisition process, centralize software inventory management and promote the sharing of software licenses.

For the SAP ELA 2 to be successful, the SAP IPT and ERP program personnel engaged in daily collaboration, communication and cooperation. The team took a judicious approach to achieve sourcing excellence by taking Better Buying Power 3.0 principles and lessons learned from the previous ELA to further streamline requirements by grouping similar needs and synergizing related efforts, like supply chain planning and financial management, while continuing to share and reuse licenses.

The SAP IPT, with representation from each of the six ERPs, CHESS and ACC-RI, accomplished several major successes that led to "best buying power." First, the team collaboratively wrote presolicitation requirements that were focused on enterprise mission needs. Then, the team provided documentation to industry partners early and often to further refine the solicitation. The team also came to the negotiation table as a collective entity, gaining major leverage for the government, given the size and scope of the combined requirements.

In all, this effort resulted in no gaps in maintenance support, obtained best value for the government and delivered a timely contract award that coincided with fiscal year end and maintenance renewal cycles to keep the programs on track. Additionally, the collaborative writing process avoided lengthy reviews and editing by multiple organizations.

There was no back and forth among the acquiring organizations, internal compliance review or bidders since the content was clear and concise, allowing responses to be turned around within hours rather

than days or weeks. Finally, the streamlined requirements review process placed all six ERP programs together to create a collective set of requirements. Together, they established an enterprise portfolio of common end-to-end software needs that combined contract line items for all six ERP programs versus having multiple contract line items for various ERP programs. Ultimately the consolidated portfolio equates to reduced costs.

"SAP and the ELAs have transformed Army business processes by leveraging commercial technology and best business practices," said COL William Russell, GFEBS project manager. "Engaging with industry allowed GFEBS to provide mature capability quicker and with fewer problems to over 35,000 users while also moving the Army one step closer to a fully auditable solution."

WHAT MAKES THIS CONTRACT UNIQUE

Through ELAs, vendors and government entities are optimizing spending and maximizing the support they receive to get the most of what's needed, which, in this case, are SAP licenses and maintenance support. However, this contract represents so much more than that—it represents the power of solid relationships.

"The current ELA represents the true value of strategic sourcing, a collaborative partnership among the ERP programs that are fielding SAP-based solutions across the Army, and the software procurement experts with CHESS and ACC-RI," said Terry Watson, acting PEO EIS. "The Army has built relationships with SAP software suppliers that enable more than just acquiring software at the lowest price. Open and transparent communication with industry partners enables the Army to remain fully informed on industry trends for the next software agreement while eliminating the overhead that results from redundant government contracts."

A good working relationship with industry allowed the Army to leverage its size, scope and customer history to establish the current five-year SAP ELA 2 for $279 million, providing significant cost avoidance in deferred maintenance costs and new procurement price locks, reflecting pricing and maintenance support at rates even lower than the original SAP ELA 1. This contract also provides the Army with significant discounts from the General Services Administration Schedule, an estimated $1.2 billion in cost avoidance, while securing the best end-user license agreement terms and conditions and ensuring additional future savings for the term of the agreement.

Inability to amply license the ERP user community would cripple the Army's ability to supply, sustain, track and manage materiel and finances to support today's military landscape. With rising technology costs and falling DOD budgets, finding ways to streamline requirements, obtain best value and reduce costs are essential to the ERP programs' future.

CONCLUSION

With future estimates of more than 300,000 Army ERP users worldwide, being able to buy SAP software licenses and maintenance support packages in bulk while capitalizing on best price break points have put new meaning to category management for military technology. As part of the SAP IPT, each stakeholder used lessons learned from previous contracts to establish this well-designed consolidated buy and category management package, breaking with the military's tradition of being unlikely to buy technology as a group.

The Army's ERP programs support the Better Buying Power mission: "the

SAP ELA Contract Historical Overview

Before 2011: FY02-FY11 (22 contracts)

CONTRACT CHALLENGES

- Separately purchased and program-managed contracts.
- License discount and maintenance fee rates varied.
- Lack of Armywide asset management visibility.
- Prevented reuse and sharing of licenses with other programs.

SAP ELA 1: FY12-FY15 (One contract)

SAP ELA 1 KEY OUTCOME

- Leveraged Army buying power.
- Significant discount on licenses.
- Fixed maintenance fee.
- Consolidated from 22 contracts to one contract.
- Streamlined procurement process.
- Reduced program administrative resources and cost.
- Centralized license tracking and inventory.
- Allowed transferring and sharing of licenses among six ERP programs.

SAP ELA 2: FY16-FY20 (One contract)

SAP ELA 2 KEY OUTCOMES

- $1.2 billion in total cost avoidance estimated for the life of this contract.
- Obtained greater license discounts than ELA 1.
- Better maintenance rate terms and conditions than ELA 1.
- Accelerated contract award from an average of 12-18 months to eight months.
- Reduced minimum annual license purchases.

THAT WAS EASY
SPC Joe Emanuel Clark, a U.S. Army South (ARSOUTH) supply clerk, receives and verifies office supplies from Henry Ford, a warehouse operator, in January 2015 at the ARSOUTH warehouse on Fort Sam Houston, Texas. The supplies were ordered and processed through the new GCSS-Army structure. The Army is replacing several aging, stovepiped, tactical logistics and financial management systems with a single Web-based ERP solution that provides tactical commanders with near-real-time logistics management information. (U.S. Army photo by SGT Mahlet Tesfaye, ARSOUTH Public Affairs)

implementation of best practices to strengthen the Defense Department's buying power … and provide the U.S. Army an affordable, value-added military capability to the warfighter." In the end, SAP ELA 2 has made the Army a skilled practitioner of collectively buying technology to support multiple missions, seeing the finest in contract negotiations and turning better buying power into best buying power to support the Army ERP missions worldwide.

For more information on Army software and hardware procurement, go to ***https://chess.army.mil****. For more information on ERP, go to* ***https://www.eis.army.mil****.*

COL HARRY CULCLASURE, AESIP project manager, is responsible for a portfolio of programs, including two of the Army's major ERP initiatives: GCSS-A and LMP. He holds a master's degree in procurement and contract management from the Command and General Staff College, a Master of Strategic Studies degree from the U.S. Army War College and a B.S. in business management from The Citadel, where he earned his commission into the field artillery. He is Level III certified in program management and contracting, and a member of the Army Acquisition Corps (AAC).

MR. THOMAS NEFF is the CHESS project leader. He entered the Army in 1982 as a private and was later commissioned as a second lieutenant from the U.S. Army's Officer Candidate School. He is currently a major assigned to the Assistant Secretary of the Army for Acquisition, Logistics and Technology's Army Reserve Element. He holds an M.Ed. from Loyola University – Chicago, an M.S. in information management from Syracuse University and a B.A. in international relations and government from Lehigh University. He is a graduate of the Senior Acquisition Course at the Dwight D. Eisenhower School for National Security and Resource Strategy at National Defense University (NDU), and holds the Federal Chief Information Officer and Chief Information Security Officer Certificates from NDU. He is Level III certified in program management and information technology, and is an AAC member.

COUNTLESS WAYS TO SUPPORT THE SOLDIER

The diverse men and women of the AAW can take pride in knowing that no matter their role in the acquisition enterprise, they each play a critical role in keeping Soldiers battle-ready. (SOURCE: USAASC)

FROM THE DIRECTOR,
ACQUISITION CAREER MANAGEMENT
LTG MICHAEL E. WILLIAMSON

SUSTAINING A WORLD-CLASS SYSTEM

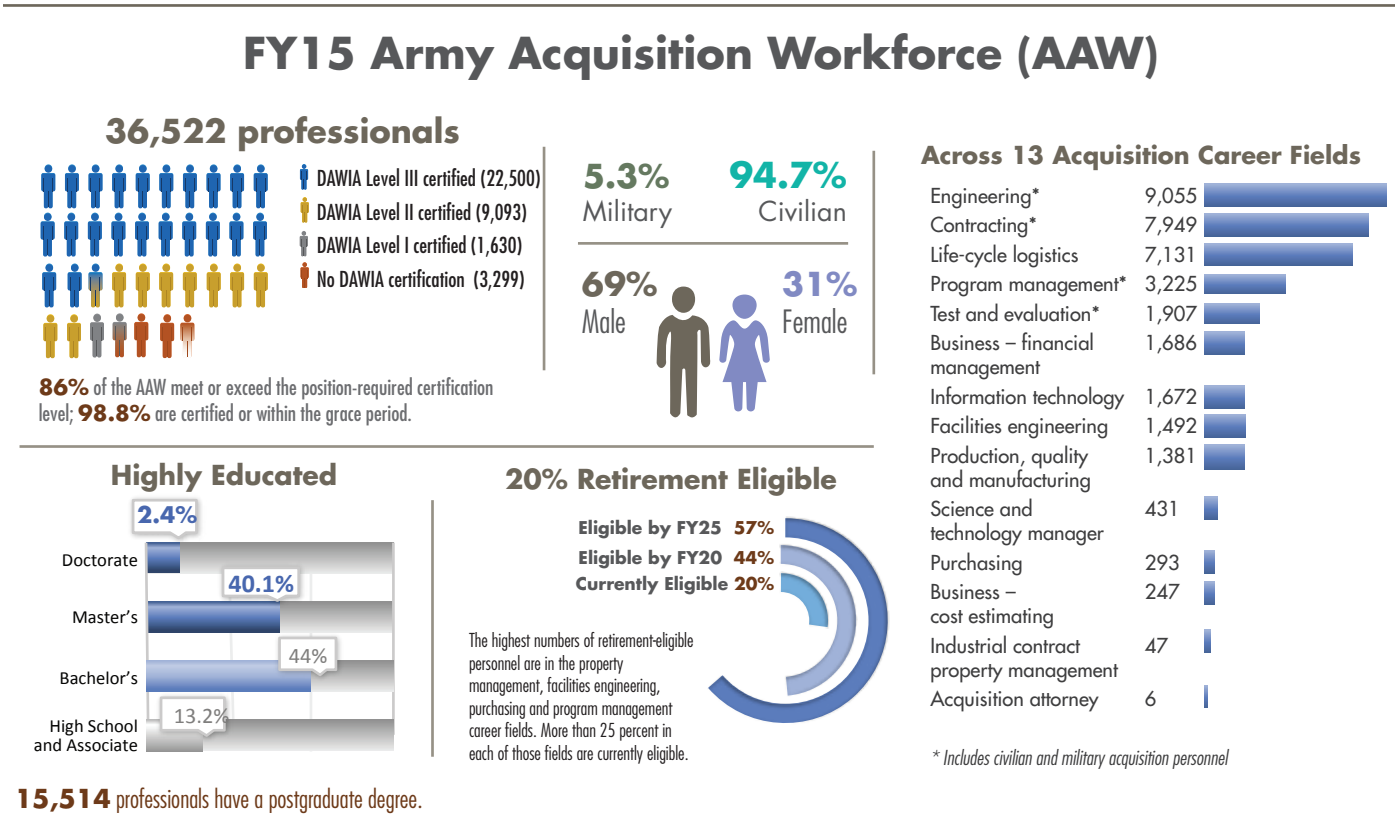
Strategic human-capital planning aims to ensure an agile, adaptable workforce

The Army Acquisition Workforce (AAW) can take great pride in knowing that the United States Army is the most formidable ground combat force on Earth, and that our role in equipping Soldiers is vital to their success. We are proud to serve the Soldier.

As the Army builds an agile and adaptive force for the future, we must continue to provide our Soldiers a decisive advantage by maintaining and sustaining a corps of high-quality acquisition professionals to develop, acquire, field and sustain the world's best equipment and services. We must accomplish this against the backdrop of an increasingly complex environment, which requires us to be well-educated, well-trained and well-informed in making the right, tough decisions. Decisions we grapple with daily include: What is the best way to equip our Soldiers for the complex threats of the future? How do we stay ahead of an enemy determined to exploit any vulnerability in our capabilities? How do we keep pace with technological change? What is the best way to get the latest technology fielded in a timely manner? These are all issues that the AAW is working on every day. We are eagerly anticipating the future, adapting and capitalizing on technological opportunities.

We will never send a Soldier into a fair fight. This is the foundation of the very professional and balanced workforce that is the backbone of our acquisition enterprise. It is imperative that we sustain our investment in a world-class workforce by continuing to recruit, develop, train and grow our talent.

FIGURE 1



THE MANY DIMENSIONS OF THE AAW

The DACM receives a monthly demographic survey of the acquisition workforce, which enables strategic, high-level planning to manage the human capital. (SOURCE: Army DACM Office)

Our people possess the competencies, commitment and values that enable Army Soldiers and civilians to contribute to global Army operations. Monthly, I receive an AAW demographic assessment. This is a snapshot of the number of military and civilian acquisition professionals we employ, their education and certification levels, the percentages of military and civilian, male and female, the average years of service and average age, as well as their eligibility for retirement. (See Figure 1.)

What makes us truly unique is having a smart, professional and passionate workforce that is committed to providing cutting-edge capabilities to our Soldiers. Nurturing, challenging and developing that world-class workforce is our great challenge. We must sustain our workforce in order to continue to be effective and efficient at delivering superior capabilities to our warfighters.

Our outreach and collaboration network to manage, support, reward and measure the success of our Army acquisition Soldiers and civilians includes designated acquisition career management advocates at each of our acquisition organizations. These advocates advise me on the accomplishment of specific goals and programs related to my efforts as the DACM, and help me fully understand what is happening within the entire AAW. I rely on the Army DACM Office within the U.S. Army Acquisition Support Center (USAASC) as the principal organization helping me manage the workforce. The DACM Office, in turn, provides the AAW with the tools, development programs, courses, funding and much more to enable our acquisition professionals to focus on their important missions.

PREDICTING AAW'S FUTURE

Our acquisition structure is the way we organize people and information and allocate resources to support our work processes and workload. We are developing a program-specific Predictive

Resource Staffing Model (PRSM) as a tool to provide detailed recommendations on the questions: How much work is likely to be needed for a product in a given phase? What type of work? What staffing mix? What are the skills required to perform the work? What personnel are available today and required for the future?

This capability will allow us to prioritize critical skills and plan future workforce requirements in advance, implementing acquisition workforce statutes across the Army enterprise by command and function. This ensures that today and in the future, we have the human capital—the acquisition professionals—who think critically on many levels, integrate inputs from many perspectives, balance the need for competition, and make sound business and technical decisions to meet the needs of our customer—the Soldier.

Our work processes are driven by systematic, strategic planning for human capital whereby we transform stakeholder inputs into value that we deliver to Soldiers. Human capital planning increases the effectiveness of the workforce by identifying and addressing workforce gaps and providing solutions to recruit, develop and retain a highly skilled, fully engaged AAW for the future. The human capital enterprise team within the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology (OASA(ALT)) and the DACM Office have partnered to build an AAW Human Capital Strategic Plan (HCSP) to address my concerns from both systematic planning and perspectives.

The HCSP includes five major goals focused on:

1. Workforce-shaping to meet our acquisition mission.
2. Professional development to sustain an agile and highly qualified workforce.
3. Leadership development to sustain effective Army acquisition leaders.
4. Employee engagement as a core business practice.
5. Continuous improvement in communications and collaboration to support the workforce.

Every day, the Army DACM Office is working proactively to identify AAW trends and challenges and to develop policies and programs to mitigate them.

CONCLUSION

Today's challenges, threats and opportunities are unprecedented. Our Soldiers depend on each of us to be fully engaged and highly effective as we ensure that they have the capabilities they need to conduct full-spectrum operations across the globe. Systematically and strategically managing the acquisition workforce is paramount to ultimately ensure mission success. We must be certain that we have the right people with the right skills to meet current and future equipping needs.

We must continue to cultivate common ground for working more effectively, collaboratively and productively with everyone on the Army team. This will enable acquisition leaders to maintain environments of trust and respect that are inclusive of Soldiers and civilians from diverse backgrounds, enhancing our ability to inspire, retain and leverage the whole Army and its great strengths. Well-educated, well-trained and experienced people are the key. High-quality acquisition workforce professionals drive better acquisition outcomes.

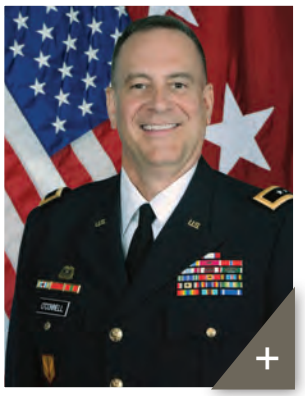
GLOBAL RESPONSIBILITIES

LTG Michael E. Williamson, principal military deputy to the ASA(ALT); GEN Vincent K. Brooks, commanding general, U.S. Army Pacific (USARPAC); Navy RDML Kathleen M. Creighton, U.S. Pacific Command J-6; and COL James Ross, Project Manager for Tactical Radios within the Program Executive Office for Command, Control and Communications – Tactical (PEO C3T), gather Feb. 18 at a USARPAC exercise at Fort Shafter, Hawaii. The exercise highlighted how Soldiers on land and at sea were able to talk, text, share data and track the progress of a ship. Soldiers depend on the full commitment of the AAW to ensure that they have the capabilities they need to conduct full-spectrum operations across the globe. (Photo by Kyle Bond, PEO C3T)

INTO THE BOX
Soldiers from the 2nd Stryker Brigade Combat Team, 2nd Infantry Division, based at Joint Base Lewis-McChord, Washington, prepare their vehicles to go in the "box"—the training area that simulates a combat location—at the National Training Center at Fort Irwin, California, in January. One of the logistics readiness centers' main missions is to support the scheduled rotations there. (Photo by Jon Micheal Connor, ASC Public Affairs)

FROM THE COMMANDING GENERAL,
U.S. ARMY SUSTAINMENT COMMAND
MG KEVIN G. O'CONNELL

READINESS FIRST



Ever-changing challenges require an active, adaptive response from ASC

I am often asked about the challenges that are impacting the U.S. Army Sustainment Command (ASC) and how we are meeting those challenges head-on. ASC is constantly looking to increase its efficiency and adaptability in regard to our global mission of supporting combatant commanders. To do that, I would like to explain some of the functions we are involved with and how they support our nation's warfighters.

We recently completed the realignment of several of our Army field support brigades (AFSBs), both at home and abroad. These units now have responsibility for areas that include Iraq, Afghanistan, Kuwait and Qatar, as well as the U.S. Pacific Command (PACOM) area of responsibility, which includes Hawaii and Alaska. There were also shifts in responsibilities for U.S. locations to enable ASC to effectively handle widespread operations in the United States and around the world. AFSBs provide vital support and mission command functions to their subordinate units.

We have also added several new logistics readiness centers (LRCs) to improve our operations and extend our reach across the globe. ASC has completed the transfer of the final two directorates of logistics at Joint Base Lewis-McChord, Washington, and Soto Cano Air Base, Honduras. This transition included the movement of 340 personnel and $450 million worth of equipment. Decreases in Army end strength and declining resources will require efficiencies and/or reductions in requirements, and will demand changes in expectations for delivery of installation services. We have made great strides in improving the business operations of installation logistics, enabling our Army, our installation senior commanders and others to "see ourselves" clearly with respect to capabilities, requirements and funding.

MATERIEL READINESS

The Army Prepositioned Stocks (APS) program remains a critical strategic priority. APS enables the bolstering of Army activities in all combatant commands, supports a globally responsive and regionally engaged Army, and provides Army materiel readiness and support to unified land operations.

The Army recently decided to increase the APS requirements of U.S. Army Materiel Command (AMC) by 49 percent because support requirements in Europe have increased. Based on guidance from the Office of the Secretary of Defense and its decisions related to Europe, the Army will deploy strategic landpower to Europe in

FY16-17 to assure our NATO allies of our commitment to their security. This will allow combatant commanders to have a forward capability without permanently stationing troops. With the success of current European activity sets, the Army is building additional sets for PACOM, U.S. Africa Command and U.S. Special Operations Command. Each activity set consists of vehicles and equipment to support combined-arms operations.

Despite these challenges, ASC continues to ensure readiness, which is Chief of Staff of the Army GEN Mark A. Milley's No. 1 priority. As he proclaimed in August 2015, "Readiness is No. 1, and there is no other No. 1."

ASC's Support Operations Directorate enhances readiness through a variety of programs. ASC's mission sets include APS, lead materiel integrator, materiel management, Logistics Assistance Program, Logistics Civil Augmentation Program (LOGCAP) and LRCs. LRCs are vital to the readiness of U.S. Army Forces Command, U.S. Army Pacific, U.S. Army Europe and U.S. Army Training and Doctrine Command—providing home station supply, maintenance and transportation logistics support to deploying units, rotational units, regionally aligned forces and initial military training units—as well as support to Army reorganization as units build and sustain readiness.

As such, ASC, a subordinate command of AMC, ensures that the Army provides the right materiel, in the right quantity and condition, to the right place at the right time.

MANAGING THE MATERIEL

The Distribution Management Center's Supply Division of ASC ensures that the Army remains the world's premier combat force by sustaining readiness through detailed and daily materiel management. This directly impacts force readiness through a release strategy for high-priority or significant requisitions in Global Combat Support System – Army, and ensures the seamless flow of parts through the supply system from the customer to the national level. The oversight provided by the Supply Division greatly improves readiness through continuous analysis and resolution of systemic problems. The center's Materiel Readiness Division provides materiel and maintenance management assistance and performance analysis to more than 70 APS and LRC maintenance operations worldwide.

UPDATING THE FORCE
The author makes a point during the second annual LRC Symposium in December 2015 in Davenport, Iowa. LRCs improve ASC's ability to support global operations efficiently in resource-constrained times. (Photo by Kevin Fleming, ASC Public Affairs)

One of our largest programs is Enhanced Army Global Logistics Enterprise (EAGLE) contracting, which provides a single logistics provider on installations for supply, maintenance and transportation functions. In close coordination with our contracting partners within the U.S. Army Contracting Command, we are continuing to implement EAGLE across the Army.

In the interest of continuous improvement in the management of our services contracts, we are focusing on improving our internal processes as well as the tradecraft of the workforce involved in services acquisition. This is especially important considering the environment of constrained resources we still find ourselves in and probably will for the foreseeable future.

CRITICAL LIFE SUPPORT

Lastly, I would like to touch on the LOGCAP division of ASC, which continues to provide base life support services and selected sustainment functions to U.S. military and coalition forces participating in the Combined Joint Forces

SUPPLY MANAGEMENT
An employee of the LRC – Hawaii's Central Issue Facility receives equipment and clothing items from a Soldier in a warehouse at Schofield Barracks, Hawaii, in December 2015. Daily management by the Distribution Management Center's Supply Division keeps track of the many and diverse items required to support the worldwide Army. (Photo by SFC Shannon Wright, ASC Public Affairs)

PREVENTIVE MAINTENANCE
An LRC-contracted maintenance employee checks the oil on a High Mobility Multipurpose Wheeled Vehicle at Fort Irwin in January. ASC-supported LRCs are vital to the readiness of many Army entities, including U.S. Army Forces Command, of which the National Training Center is a subordinate unit. (Photo by Jon Micheal Connor, ASC Public Affairs)

Land Component Command – Iraq in support of Operation Inherent Resolve. LOGCAP also conducts scheduled and unscheduled maintenance, wholesale property management transactions, warehousing support, and additional operations and maintenance-related service support to regionally aligned forces in support of U.S. Army Europe training, exercises and operations. LOGCAP supports two named operations and two separate requirements within the U.S. Africa Command's area of responsibility. LOGCAP provides 355 base life support and sustainment services at 10 base camps, in support of a population of nearly 30,000 Soldiers, civilians and NATO partners.

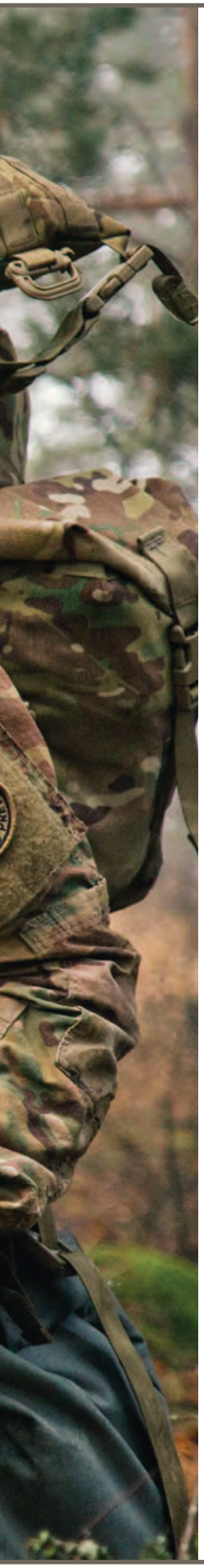
While we will always be challenged and our workload increases daily, we will continue to meet upcoming challenges and provide our Army the best services in the world.

On the Line!

For more information, go to ***http://www.aschq.army.mil/home/default.aspx****.*

MG KEVIN G. O'CONNELL is ASC commanding general at Rock Island Arsenal, Illinois. Previously he served as the deputy chief of staff for logistics (G-4) for the U.S. Army Forces Command at Fort Bragg, North Carolina. He holds a Master of Strategic Studies degree from the U.S. Army War College and a B.S. in business administration and economics from High Point College. He is also a graduate of the U.S. Army Command and General Staff College, the Armed Forces Staff College and the Quartermaster Basic and Advanced Courses.

HIGH-PROFILE EFFORT
Troopers assigned to 4th Squadron, 2nd Cavalry Regiment, wearing uniforms in the recently released operational camouflage pattern, conduct a Spur Ride in December 2015 in the training area near Camp Albertshof, Hohenfels, Germany. The Spur Ride is an event that tests the physical strength, endurance and knowledge of common Soldier skills among select cavalry Soldiers seeking to earn their spurs as a symbol of their capacity to lead. To many, a Soldier's camouflage is as important a factor in combat effectiveness as warfighting skills and weapon systems. Camouflage changes garner high-profile attention among Soldiers and policymakers alike, necessitating a STRATCOM plan to foster better understanding and concurrence. (Photo by SSG Jennifer Bunn)



BEEN THERE, DONE THAT

STRATCOM STRONG

A program document you may never hear about

(First in a series of quarterly commentaries by former program managers from the Naval Postgraduate School)

by Dr. Robert F. Mortlock, COL, USA (Ret.)

Most of the time when people say, "Been there, done that," they probably haven't. To say that the former program managers who will be writing this new series of insightful columns have been there and done that is not a boast but an understatement. We at Army AL&T magazine marveled at our good fortune when the Naval Postgraduate School (NPS)—specifically Senior Lecturer John T. Dillard, COL, USA (Ret.), academic area chairman for systems acquisition management and himself a former program manager at multiple levels—approached us with the idea of a series of lessons-learned articles by former O-6 project managers who teach at NPS.

This is the series' inaugural article, food for both thought and action. We intend this series not to be quarterly statements of fact, but quarterly conversation starters. Yes, these folks have been there and done that—but maybe you have, too. We hope you will feel free to raise your hand and jump right into the conversation. Please send us your feedback to continue the discussion.

The program is on schedule, under budget and meeting performance requirements—but terminated anyway! Government PMs—product, project and program managers alike—are responsible for cost, schedule and performance of assigned programs. Well, sort of. Many external factors affecting programs are outside their control.

These PMs operate in the center of a volatile, complex, uncertain and ambiguous system called "Big 'A' Defense Acquisition"—trying to navigate the requirements process (Joint Capabilities and Integration Development System, the Planning, Programming, Budgeting and Execution system, and the DOD Acquisition 5000 series). If that weren't enough, PMs get guidance from key stakeholders, such as senior service leaders and members of Congress, as well as scrutiny from the media. In the end, having a program on schedule, under budget and meeting requirements may not be enough to deliver capability to the warfighter.

What's missing? For one thing, a strategic communications (STRATCOM) plan, which has proved to be invaluable to program success.

OPTIONAL BUT ADVISABLE

You will not find "STRATCOM plan" listed as a required document at any program milestone review. Nor do I propose that it be; too many unnecessary milestone review documents are required already (a separate topic). However, a STRATCOM plan can serve a PM very well if approved by the service chain of command and used effectively. It can be a synchronization tool for the entire Army staff, serving as an operations order (OPORD) for program implementation across the Army.

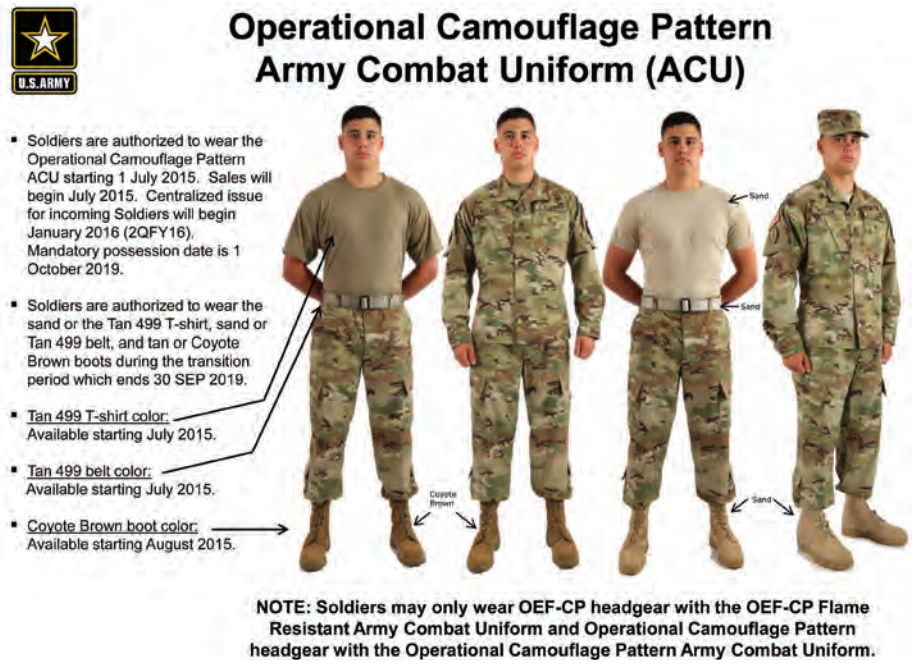
A STRATCOM plan is particularly useful for programs that affect all service members (representing a high level of interest), have complex and multiple milestone decision authorities, and/or have high visibility with Congress and the media and a correspondingly high level of interest with service senior leaders. Two programs that fit this description are the Army's physical fitness uniform and the camouflage effort for Army uniforms and equipment.

In early 2012, the Army decided to upgrade its Soldier fitness uniform from the Improved Physical Fitness Uniform (IPFU) to the Army Physical Fitness Uniform (APFU). Soldiers were dissatisfied with the IPFU, which had been in use since the mid-1990s. The APFU program used extensive Soldier feedback (both surveys and testing) to improve the fitness uniform and implement the program in a cost-conscious way.

For combat uniforms and equipment, the Army decided to adopt the operational camouflage pattern, which would provide Soldiers effective concealment during combat operations and prove to be a force protection combat multiplier across the modern battlefield.

Both the APFU and the camouflage programs needed a synchronization tool, as their implementation was highly visible among Soldiers, senior leaders, Congress and the media at a time of sequestration and intense budget uncertainty. The last thing the Army wanted to do was make a uniform change not necessitated by Soldier feedback, not operationally relevant, contrary to pending legislation or congressional intent, or with the potential to create a black eye in the media for the Army.

Additionally, the camouflage effort crossed multiple chains of command because it affected both uniforms and equipment having no single milestone decision authority (MDA). Uniform changes are approved by the chief of staff of the Army (CSA)—and sometimes the secretary of the Army (SecArmy), if there is intense congressional, public or media interest—after an approval recommendation from the Army Uniform Board. But camouflage also goes on organizational clothing and individual equipment, and each piece of Soldier kit (cold weather clothing, rucksacks, weapons, bags for night vision sights, etc.) may have a different program MDA—either a program executive officer (PEO) or the Army acquisition executive (AAE), depending on the acquisition category.



HIDING IN PLAIN SIGHT

The operational camouflage pattern became available for purchase in select military clothing sales stores July 1, 2015. While camouflage goes on a wide variety of organizational clothing and individual equipment, each piece of which may have a different program MDA, there is no MDA for the pattern itself. As a result, many groups of people across multiple chains of command have a stake in the camouflage pattern, making a STRATCOM plan all the more advisable to help gain their buy-in. (Image courtesy of PEO Soldier)

THE OLD AND THE NEW
Black socks are now authorized for wear with both the traditional gray IPFU and the new (black and gold) APFU, worn here by a U.S. Army Alaska formation participating in an Army Birthday Run in June 2015 on Joint Base Elmendorf-Richardson, Alaska. The APFU resulted from Soldier feedback. A good STRATCOM plan kept stakeholders on target and helped to prevent requirements creep. (Photo by Alejandro Pena, Joint Base Elmendorf-Richardson Public Affairs)

A FIXED REFERENCE POINT

Recognizing the need for a document to help synchronize the APFU and camouflage implementation efforts, the program management office wrote a STRATCOM plan for each effort in early 2013. Although coordinating review and approval of these documents through the Army staff was painful, it ultimately paid big dividends as the programs were questioned by Soldiers, senior leaders, Congress and the media.

The STRATCOM plans that we used had the following sections: intent, background, environment, risks, target audience (primary and secondary), vulnerabilities and mitigation, execution, public affairs guidance, points of contact and enclosures (top-level messages, talking points, questions and answers, execution matrix, program support overview and information slides). This may seem like an overwhelmingly long document, but it certainly does not have to be. The base document we used was four pages long and the enclosures were another 10 pages. The program overview consisted of only seven slides describing the program.

Each document was signed and approved by the key stakeholders from the user community, the Army staff through the CSA, the acquisition chain of authority through the AAE, and the SecArmy.

Many times, senior leaders tried to "help" the efforts by adding requirements, commenting on efforts or changing the implementation strategies. Each time, I, as the PM, referenced and shared the STRATCOM plan approved by the CSA and SecArmy. The plan proved tremendously useful to avoid requirements creep, budget cuts and schedule delays. Additionally, the STRATCOM plan was the only program document I had that contained a written "commander's intent" clearly outlining the program vision and boundaries for me as a PM.

PMs can tailor a STRATCOM plan to their particular effort and use it as a "living" document to be updated when program "fact of life" changes necessitate it.

CONCLUSION

I know: another document to write and staff … more oversight … less empowerment for the PM … more coordination. I understand and empathize. The beauty here is that a STRATCOM plan is not required by statute or regulation. However, I highly recommend one for any program that has high visibility with Soldiers, senior leaders, Congress or the media, or any program that crosses MDA boundaries.

You never know what external factors can derail programs, even those on schedule, within budget and meeting requirements. And right now, there is no program document that tells the program's story—that synchronizes the program's implementation and execution plan across the service and provides the commander's intent succinctly—to serve as the program execution OPORD. The objective of the defense acquisition system is to get a capability in the hands of warfighters, and a STRATCOM plan can help a PM and the service do that more effectively.

DR. ROBERT F. MORTLOCK, COL, USA (Ret.), managed defense systems development and acquisition efforts for the last 15 of his 27 years in the U.S. Army, culminating in his assignment as the Project Manager for Soldier Protection and Individual Equipment in PEO Soldier. He retired in September 2015 and is now a lecturer for defense acquisition and program management in the Graduate School of Business and Public Policy at the Naval Postgraduate School in Monterey, California. He holds a Ph.D. in chemical engineering from the University of California, Berkeley, an MBA from Webster University, an M.S. in national resource strategy from the Industrial College of the Armed Forces and a B.S. in chemical engineering from Lehigh University.

USAASC PERSPECTIVE

FROM THE DIRECTOR,
U.S. ARMY ACQUISITION SUPPORT CENTER

SUSTAIN, Maintain, Train, RETAIN

DAWDF helps commands support the Army Acquisition Workforce

Craig A. Spisak
Director, U.S. Army Acquisition Support Center

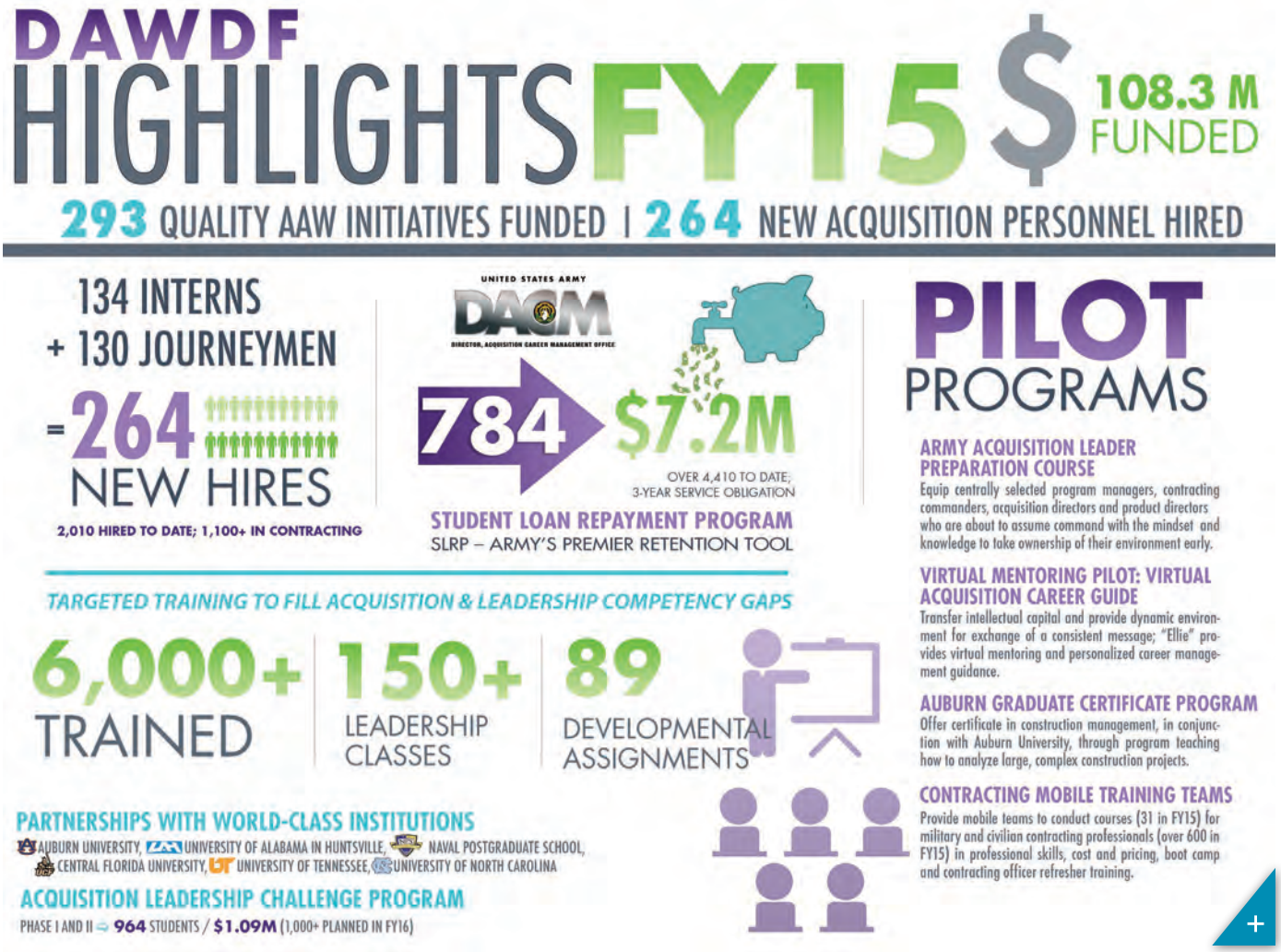
The Army Director for Acquisition Career Management (DACM) Office in the U.S. Army Acquisition Support Center (USAASC) is responsible for sustaining and managing the careers of 36,000-plus Army acquisition professionals. Our 50 experts in three branches support this workforce with everything related to acquisition careers, from certification and education to mentoring and leader development. One of the sustainment tools we use to successfully accomplish this daunting task is financial support from the Defense Acquisition Workforce Development Fund (DAWDF).

FURTHERING WORKFORCE DEVELOPMENT

DAWDF was established by Section 852 of the National Defense Authorization Act (NDAA) for Fiscal Year 2008 to support DOD acquisition organizations with additional funds to help them develop and train their workforce, fill capability gaps, oversee contractors and achieve best value and return on investment for the taxpayer.

Funding for DAWDF comes from expiring appropriations for the Army's operation and maintenance account. Instead of terminating, those funds roll over to support DAWDF. Until recently, DAWDF itself was scheduled to "sunset" in 2018, but it became permanent in January with the passage of the FY16 NDAA, bringing more predictable funding and making it easier to plan programs. This permanence instills confidence in acquisition organizations, which now know that they can count on DAWDF annually. We are looking forward to the innovative initiatives this will bring to the Army Acquisition Workforce.

The Army DACM Office manages and approves all Army DAWDF-implemented initiatives from Army acquisition commands and organizations, including the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology, U.S. Army Forces Command, program executive offices, U.S. Army Training and Doctrine Command, U.S. Army Materiel Command, U.S. Army Installation Management Command, U.S. Army Medical Command, the U.S. Army Reserve and the Army National Guard. Each of these organizations submits a DAWDF request to the DACM for initiatives in the current fiscal year, as well as estimates and planning for subsequent fiscal years.



DAWDF ACCOMPLISHMENTS
The $108.3 million in FY15 Army funding for DAWDF supported a wide variety of initiatives to develop and sustain the Army Acquisition Workforce (AAW). Now a permanent program, DAWDF promises to continue contributing to innovative ways to support the workforce for years to come. (SOURCE: USAASC)

According to Jason Pitts, program manager for Section 852 (DAWDF), all initiatives processed by his team must support the Army acquisition executive's strategic objectives: to improve certification rates; build acquisition functional and leadership skills; increase core competencies; and recruit, retain and recognize the best talent.

"We gather all of the requirements from all the commands and screen them for deficiencies and clarification to ensure that what they submit is a clear, solid initiative," he said. "We roll it up into one big plan and brief it to acquisition senior leaders, from the DDACM [deputy DACM] to the DACM, to make sure what we are doing with DAWDF meets the DACM's intent."

Once the plan receives leadership endorsement, it goes to the Human Capital Initiatives Directorate in the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics (OUSD(AT&L)) for approval.

Pitts' team also reaches out to the commands to help with ideas for initiatives using DAWDF.

"I found that not every command or organization knows what they can do with it. We hold monthly telephone calls where we talk about best practices and lessons learned," Pitts said.

Also, personal visits help kick-start innovations using DAWDF. "When I meet with commands individually and let them

throw out ideas that they've had, some of them are very creative, and if [such an initiative] meets the intent, we go with it."

CLEARLY INVENTIVE

In one training initiative success story, the U.S. Army Corps of Engineers' Directorate of Contracting used DAWDF to sustain its contracting professionals by creating an on-the-job training program. The program, developed to address weaknesses in contracting procedures identified from procurement and command reviews, is twofold: It attacks real-time problems in a positive, constructive manner and gives contracting leadership an in-person opportunity to coach, train and mentor the future force of the organization.

Taught by seasoned procurement analysts in one- to two-hour workshops, the on-the-job training covers topics such as justifications and approvals, contract closeout procedures, price negotiation memorandums, determination and findings, market research and contract formation checklists. In FY14, this DAWDF-funded program provided hands-on training to more than 3,000 acquisition professionals in multiple functional areas, including contracting, small business, facilities engineering and program management.

CONCLUSION

Since 2008, the Army has received more than $650 million in DAWDF funding to help us build and retain a high-quality, agile and adaptive workforce.

Our DAWDF initiatives include the Student Loan Repayment Program, the Army's premier retention tool, which by itself has attracted more than 4,400 participants, and targeted training to fill acquisition and leadership gaps. Successful pilot programs include the Army Acquisition Leader Preparation Course, a program to prepare newly centrally selected acquisition leaders for their new leadership roles and duties, and the tireless Ellie, the virtual acquisition career guide and computer-generated mentor, available 24/7 to answer questions and offer career feedback. All of these initiatives are made possible through DAWDF.

In an April 2015 memorandum, the Hon. Frank Kendall, USD(AT&L), stated that it is imperative for the services to sustain and build on the investments made to increase the capacity and capability of the acquisition workforce. The Army DACM Office takes that quite seriously. With help from DAWDF funding to boost our capability, we will continue our commitment to sustain, maintain, train and retain the Army Acquisition Workforce as world-class professionals dedicated to our warfighters in providing the best weapons, services and technology as quickly as possible.

CAREER CORNER

THE ARMY DACM OFFICE

The most important acquisition career tool you've never heard of

by Army DACM Office Staff

The Defense Acquisition Workforce Improvement Act (DAWIA) made jobs in defense acquisition unique. Suddenly, it established a variety of statutory requirements for those in acquisition-designated positions within specific acquisition career fields—in general, education and lots of it, not to mention certifications. It's arguable that no other jobs attract the kind of scrutiny, or are as subject to so many rules and regulations, as acquisition jobs. But given the many billions of taxpayer dollars for which those in acquisition are responsible, it just makes sense. The bottom line is, DAWIA was put into law to ensure the professionalism of the Defense Acquisition Workforce.

Because of the legislation's many moving parts, DAWIA also instituted acquisition career managers for each service as well as the fourth estate agencies where acquisition positions reside, meaning agencies outside the military departments or combatant commands. In our case, that's LTG Michael E. Williamson, principal military deputy to the assistant secretary of the Army for acquisition, logistics and technology (ASA(ALT)) and Army director, acquisition career management (DACM). The team that supports him, the Army DACM Office, is responsible for everything acquisition career-related. Everything.

What is it?

The Army DACM Office is the headquarters responsible for managing acquisition workforce statutory requirements and professional development programs.

- All members of the Army Acquisition Workforce (AAW) are responsible for meeting statutory requirements—such as DAWIA acquisition career field certifications, Defense Acquisition University (DAU) training, education and experience requirements—and continuous learning points necessary to remain relevant in an acquisition career field.
- To strengthen acquisition careers and offer opportunities for advancement, the Army DACM Office offers many professional development opportunities that acquisition professionals can and should pursue (training, education and experience).

The Army DACM Office online, **http://asc.army.mil/web/dacm-office**, is the one-stop shop for everything acquisition-career related. Here are some frequently asked questions.

What does it do for the Army Acquisition Workforce?

The Army DACM Office manages the money, determines the Military Acquisition Position List billets, manages central selection boards, schedules DAU courses for Army employees,

ensures compliance with DAWIA certification, develops and manages professional and leader development programs, determines AAW policy, implements Office of the Secretary of Defense initiatives regarding the AAW, manages the Defense Acquisition Workforce Development Fund (DAWDF) for the AAW, and writes the reports to DOD and Congress—all of it so organizations across the Army acquisition community can focus on their missions.

Why is it important?
It's the responsibility of the Army DACM Office to equip the Army Acquisition Workforce with the knowledge, information and opportunities that will help Army acquisition professionals succeed. It's the job of each acquisition professional to obtain and understand the information.

- The AAW of today is the most talented, educated and experienced in our history—and the Army DACM Office is committed to making it even better.
- The Army DACM Office must continue to develop a new cohort of leaders to ensure that we meet the Army's future challenges. Resources and policies are available online to support and develop the workforce, from talent management to mentoring, onboarding and more.

For the most current information about the Army DACM Office and additional career guidance, go to ***http://asc.army.mil/web/dacm-office/****.*

EDUCATION AND TRAINING OPPORTUNITIES

The centralized announcements for the **Naval Postgraduate School Master of Science in Program Management (NPS-MSPM)** and the **Naval Postgraduate School Master of Science in Systems Engineering (NPS-MSSE)** close on April 11. The NPS-MSPM is a distance-learning program that offers an opportunity to earn an M.S. in program management on a part-time basis within two years. The Army DACM Office sponsors the NPS-MSPM program and will fund the tuition and book costs. The NPS-MSSE program is designed for DOD organizations tasked with addressing systems engineering and integration challenges. NPS educates and trains engineers with tools and technologies relevant to their work, resulting in employees with greater knowledge and expertise who can better meet the needs of their customers.

The application window for FY17-01 **Advanced Civil Schooling (ACS)** opened in March and will close on May 3. Any Functional Area 51 officers approved for FY17-01 ACS must start their schooling between Oct. 1, 2016, and March 31, 2017. ACS provides opportunities for officers to pursue advanced degrees in acquisition- and business-related disciplines at civilian universities on a full-time, fully funded basis. The goal is to ensure that Army Acquisition Corps (AAC) officers receive the best and most appropriate graduate degrees available in a timely and cost-effective manner.

The Army DACM Office announced the opening of the FY17 **DAWDF** data call in February. This fund permits DOD to recruit, hire, develop, train and retain its acquisition workforce. (For more information about DAWDF, see "Sustain, Maintain, Train, Retain," Page 130.) Commands and organizations seeking to request funds should consider initiatives that will improve certification rates among the acquisition workforce, develop functional and leadership skills, increase acquisition core competencies, and recruit, retain and recognize acquisition workforce talent. Funding is approved and allocated based on priorities established in the AAW human capital strategic goals and by individual organizations. The deadline for submitting FY17 DAWDF requirements is May 15.

The fourth quarter FY16 **Acquisition Leadership Challenge Program (ALCP)** announcement will open in May. This team-building, seminar-based program serves as a practical guide to help develop leadership and diversity in all organizations. ALCP

training aims to improve communication across all levels of leadership and to help develop leaders who value individual styles and behaviors. The end result is a leadership corps that is more capable across a variety of areas, including critical thinking, problem-solving, collaboration, creativity and innovation. Additional information is available from command or organization acquisition career management advocates and organizational acquisition points of contact.

The **Acquisition Tuition Assistance Program (ATAP)** announcement is scheduled to open in May. ATAP primarily supports funding to meet DAWIA educational requirements for permanent civilians and noncommissioned officers with the military occupational specialty 51C. Secondarily, ATAP also funds highly endorsed permanent AAW members who are applying for required business hours toward AAC membership or for acquisition- or business-related courses toward a bachelor's or master's degree.

The announcement for the **Competitive Development Group/Army Acquisition Fellowship (CDG/AAF) Program** will open in June—not in January, as it has in the past. This three-year developmental program offers board-selected applicants expanded training, leadership, experiential and other career development opportunities. The CDG/AAF program is designed to help develop competitively selected program managers. This once-in-a-lifetime opportunity to complete multiple developmental assignments and competitive training programs over a three-year period serves as the premier entry point for a GS-12/13 or broadband equivalent to transition from a technical acquisition career field into program management.

The **DAU Senior Service College Fellowship Program** will be celebrating its 10th anniversary this June. The 10-month leadership and educational program intended for high-performing and high-potential GS-14/15 or broadband equivalent is conducted under the auspices of DAU at Huntsville, Alabama; Warren, Michigan; and Aberdeen Proving Ground, Maryland. The purpose of the program is to provide leadership and acquisition training to prepare senior-level civilians for key acquisition leadership positions, such as product and project manager and program executive officer. More than 200 acquisition civilians have graduated from this program to date, and many have gone on to become members of the Senior Executive Service.

For more information about the Army DACM Office education and training opportunities programs, go to ***http://asc.army.mil/web/career-development/programs/****.*

CAREER DEVELOPMENT TOOLS AND INITIATIVES

The **Acquisition Workforce Qualification Initiative (AWQI)** is a key element of Better Buying Power. AWQI aims to make certain that everyone involved in acquisition has the skills required to ensure successful acquisition outcomes. This employee development tool can be used to identify job-specific gaps in experience, capture demonstrated acquisition experience and identify developmental opportunities. AWQI provides a common set of standards for acquisition career field competencies that organizations can use to address gaps in mission-critical acquisition skills by leveraging developmental opportunities or on-the-job experiences. AWQI will roll out to the AAW this spring as a tool with a link initially on the civilian acquisition career field models. The Army DACM Office is the proponent for implementing the AWQI within the AAW. For more information, go to **http://asc.army.mil/web/news-february-2016-hot-topics/**.

The ASA(ALT) and the DACM Office have been working since September 2015 on developing the **Army Acquisition Workforce Strategic Human Capital Plan (AAW SHCP)**, which will provide strategic insight into the state of the AAW and help shape the path forward. Also contributing to the effort and helping to gather and incorporate leader insights are the deputy assistant secretaries in the Office of the ASA(ALT), Army acquisition career management advocates, Army acquisition functional advisers and other subject-matter experts from across the Army acquisition community. Implementation of the AAW SHCP will engage us as collective stakeholders and partners to anticipate and meet future challenges from a functional, program office or field perspective. Details of the plan are expected to be released this summer.

The **Senior Rater Potential Evaluation (SRPE)** is a tool for evaluating potential—specifically, how civilian employees in designated grades or broadbands might perform in positions of increased responsibility. The SRPE is also a talent management tool that enables comparison of the civilian grade and broadband structure with the other incumbents in that structure. The SRPE is not to be used in conjunction with the various performance appraisal systems. One use of the SRPE is as part of the application process for Centralized Selection List boards, the competitive CDG/AAF program, the new centralized product and project director boards and certain Senior Service College programs. See the policy, forms, guidebook and more at **http://asc.army.mil/web/alt-workforce-policy-procedure/**.

ACCELERATING SYNERGY

BETWEEN INTEL & FORCE PROTECTION

DOD Biometrics Project Management Office transitions to PEO IEW&S this Spring.

Department of Defense
BIOMETRICS
Project Management Office

PEO IEW&S

For further information, please contact Ms. Michelle Marzec, Public Affairs POC for DOD Biometrics Project Management Office at 703.697.2861 or DSN 2272861.

ON THE MOVE

MCFARLAND NAMED ACTING ASA(ALT)

President Obama has appointed the **Hon. Katharina (Katrina) McFarland** to serve as acting assistant secretary of the Army for acquisition, logistics and technology (ASA(ALT)), filling the post vacated by the **Hon. Heidi Shyu** on Jan. 31.

Before joining the DA, McFarland was the assistant secretary of defense for acquisition, serving as principal adviser to the secretary of defense and the undersecretary of defense for acquisition, technology and logistics on matters related to acquisition. Previously, she served as president of the Defense Acquisition University and director for acquisition for the Missile Defense Agency.

McFarland began her civil service career in 1986 as a general engineer at Headquarters Marine Corps. She has received an honorary doctorate of engineering degree from Cranfield University, United Kingdom; the Presidential Meritorious Executive Rank Award; the Secretary of Defense Medal for Meritorious Civilian Service Award; the Department of the Navy Civilian Tester of the Year Award; and the Navy and United States Marine Corps Commendation Medal for Meritorious Civilian Service. She is Level III certified in program management, engineering and testing, and holds a professional engineer license and a PMP certification.

EASTER NAMED PRINCIPAL DEPUTY ASA(ALT)

The **Hon. Katharina McFarland**, acting ASA(ALT), appointed **Steffanie Easter** as the principal deputy ASA(ALT), effective March 7.

Easter will help lead and supervise Army acquisition, procurement, research and development and logistics endeavors, and spearhead the development of policies, programs and processes to streamline Army acquisition. She succeeds **Gabriel Camarillo**, now the assistant secretary of the Air Force for manpower and reserve affairs.

Easter previously served as executive director for the F-35 Lightning II Joint Program Office, a DOD initiative for defining affordable and sustainable fifth-generation strike aircraft. Easter also has served as assistant deputy chief of naval operations for manpower, personnel, training and education, the civilian executive adviser for all personnel resources and information systems needed to effectively manage the Navy Total Force. Additionally, she served as the assistant commander for acquisition for Naval Air Systems Command (NAVAIR), executing acquisition responsibilities for six program management offices while serving as the leader of the NAVAIR acquisition/program management competency.

Easter holds a bachelor's degree in chemical engineering from North Carolina State University and a master's in engineering management from the Catholic University of America, and is a graduate of the Defense Systems Management College and the NAVAIR Senior Executive Management Development Program. She has been a member of the Senior Executive Service since 2002.

In more than 30 years of federal service, she has received several awards, including the Navy Meritorious Civilian Service Award, the Navy Superior Civilian Service Award, the Navy Distinguished Civilian Service Award, the National Women of Color Award for Managerial Leadership and the Black Engineer of the Year Award for Professional Achievement.

NEW HEADQUARTERS FOR ACC

MG James E. Simpson, CG of the U.S. Army Contracting Command (ACC), welcomed **GEN Dennis L. Via**, top right, CG of U.S. Army Materiel Command (AMC), and other distinguished guests Jan. 7 for the ribbon-cutting ceremony to open ACC's new headquarters at Redstone Arsenal, Alabama. Simpson said it is "certainly a great day for the Army Contracting Command to finally have a permanent headquarters building." **CSM Bernard P. Smalls Sr.**, command sergeant major for the U.S. Army Expeditionary Contracting Command (ECC), **BG Michael D. Hoskin**, ECC CG, and **CSM David M. Puig**, ACC command sergeant major, joined Simpson in cutting the cake commemorating the event.

The 100,000-square-foot facility, directly across from AMC headquarters, features video conferencing capabilities, workspaces for more than 380 people and a basement that will provide storm protection. Renovations to the World War II-era building cost $17.7 million.

Since its creation, ACC has occupied several temporary headquarters, beginning at Fort Belvoir, Virginia, and most recently in leased space off the arsenal. This move is the third for ACC as a headquarters.

"I was on that field at the former AMC headquarters at Fort Belvoir eight years ago next month when the command was first established," said Via. "A straight line can be drawn from what you'll do inside of this building to the individual Soldier in the field that's deployed today. In many cases, that straight line is a lifeline, because the contracts that you handle provide the essential goods and services that our men and women cannot do without." (Photos by Ed Worley, ACC)

BRINKMANN RETIRES AT ACC – WARREN

COL Robert J. Brinkmann, military deputy to the executive director of the Army Contracting Command – Warren (ACC-Warren), Michigan, was honored in a Jan. 21 ceremony for his 32 years of active and reserve component service at the U.S. Army Garrison – Detroit Arsenal. **Kristan Mendoza**, above right, ACC-Warren's executive director, presented Brinkmann with the Legion of Merit. **MG Kirk F. Vollmecke**, above, Deputy Program Executive Officer for Intelligence, Electronic Warfare & Sensors (PEO IEW&S), presented Brinkmann with the ECC Honorary Contingency Contracting Officer Award and the Order of St. Maurice, Legionnaire Rank. Brinkmann formerly served as Vollmecke's chief of staff while assigned to the U.S. Army Mission and Installation Contracting Command, where Vollmecke was CG. (Photos by Greg Pici, U.S. Army Garrison – Detroit Arsenal)

MCCOY TAKES OVER AS CECOM CSM

The U.S. Army Communications-Electronics Command (CECOM), a subordinate element of the AMC, welcomed **CSM Matthew D. McCoy** to Aberdeen Proving Ground (APG), Maryland, Feb. 16 in a change-of-responsibility ceremony.

McCoy most recently served as the garrison command sergeant major (CSM) for the U.S. Army Garrison Humphreys, South Korea. He replaces outgoing **CSM William G. Bruns**, who is now the CSM for the U.S. Army Cyber Command at Fort Belvoir. McCoy was officially installed in his new role by **MG Bruce T. Crawford**, CECOM commanding general (CG) and APG senior installation CG, in a ceremony at APG's Myer Auditorium.

Crawford used the opening sentence of the Army's NCO Creed, "No one is more professional than I," in saluting Bruns and McCoy. "Those seven words epitomize the role our noncommissioned officers play in our Army," Crawford said, adding that Bruns "embodied the spirit immensely. And that has had a profound effect on our readiness. … We had that in CSM Bruns, and I know we will have that in CSM McCoy."

"The knowledge base inside [CECOM] is amazing," Bruns said. "Sometimes a person just gets blessed, and that's what happened to me in coming to CECOM. This is an outstanding organization in which I have learned so much. I am sure CSM McCoy can look forward to a similar rewarding experience."

McCoy was born in Port Jefferson, New York, and entered the Army in 1992. His Army career includes posts at Fort Sill, Oklahoma; Camp Pelham, South Korea; Fort Lee, Virginia; Fort Campbell, Kentucky; and Fort Bragg, North Carolina.

McCoy's assumption of responsibility fills the final open position in the CECOM command group. In November 2015, Crawford appointed **Larry M. Muzzelo** as deputy to the CG, replacing **Gary Martin.**

NEW ACTING PM FOR MISSION COMMAND

Robert Tisch assumed the duties of acting Project Manager for Mission Command (PM MC), which is assigned to the Program Executive Office for Command, Control and Communications – Tactical (PEO C3T), on Feb. 8. Tisch brings with him 20 years of expertise and leadership gained through a career in the active Army, the private sector and the Army Civilian Corps.

He previously served as the deputy PM MC under **COL Michael J. Thurston**, who is now the deputy to **MG Paul A. Ostrowski**, the ASA(ALT) deputy for acquisition and systems management. Tisch is joined by **COL LaMont J. Hall**, who will serve as the acting deputy PM MC. Hall was promoted to his current rank on Jan. 14 while serving as the Product Manager for Warfighter Information Network – Tactical Increment 2. A formal change of charter will take place this summer.

PIKE SWORN IN AT PEO MS

The **Hon. Heidi Shyu**, then the ASA(ALT), presented the charter of the PEO for Missiles and Space (PEO MS) to **Barry J. Pike** during a Jan. 20 ceremony at Redstone Arsenal, Alabama. Pike was also promoted to Senior Executive Service Tier 2. **MG L. Neil Thurgood**, outgoing PEO MS, administered the oath of office for Pike while his daughter Bonnie and Shyu looked on. (Photos by Traci Boutwell, U.S. Army Aviation and Missile Life Cycle Management Command Public Affairs)

GUCKERT ACTING DEPUTY AT PEO AVIATION

Ross Guckert has taken the controls as the acting deputy Program Executive Officer for Aviation. He assumed office on Jan. 19, replacing **Rusty Weiger**, who retired on Dec. 18.

Guckert comes to PEO Aviation after serving as the assistant deputy for acquisition and systems management in the Office of the ASA(ALT). Previously Guckert was acting deputy Program Executive Officer Soldier. Before that, he served as the director for system-of-systems engineering for ASA(ALT) and as director for systems integration at PEO Soldier.

SMITH TAKES OVER AT PRODUCT MANAGER MARSS

LTC Sean Smith, right, accepted the charter of the Product Manager for Manned Aerial Reconnaissance Surveillance Systems (MARSS) from **COL Thomas B. Gloor**, Project Manager for Sensors – Aerial Intelligence, during a ceremony at Aberdeen Proving Ground on Jan. 29. Assigned to PEO IEW&S, the Product Manager for MARSS is chartered to develop, procure, integrate, field and supply life-cycle support for Army aerial intelligence, surveillance and reconnaissance sensor payloads. (Photo by Bill Schofield, PEO IEW&S)

CHANGE OF CHARTER AT PICATINNY

COL Joseph H. Chan, Project Director for Joint Services, passed the acquisition flag to **Carl Roller**, acting Product Director for Demilitarization, during a Feb. 4 change-of-management ceremony at the Program Executive Office for Ammunition, Picatinny Arsenal, New Jersey. The passing of the flag to Roller symbolizes a transfer of authority from **LTC Terry G. Crank**, Product Manager for Demilitarization, who retired from active duty on the same day. Chief Engineer **Orest Hrycak**, center, was on hand for the transfer. (Photo by Todd Mozes, Picatinny Photographic Services)

WILLIAMS TAKES OVER AS GATOR PRODUCT MANAGER

Matt Butler, acting Project Manager for Close Combat Systems, passed the acquisition flag to **LTC O'Neal A. Williams**, Product Manager for Gator Landmine Replacement, during the assumption-of-charter ceremony Feb. 9 at Picatinny Arsenal. (Photo by Erin Usawicz, U.S. Army Garrison – Picatinny)

GEORGE TAKES OVER AS PL RCAS

Sajjan M. George, right, was introduced as the new acting Product Lead (PL) for Reserve Component Automation Systems (RCAS) during a Jan. 11 assumption-of-charter ceremony hosted by **Michael Padden**, center, Installation Information Infrastructure – Communications and Capabilities (I3C2) Project Manager (PM), at Fort Belvoir. Outgoing RCAS PL **Ralph Ocasio**, who will now serve as the deputy PM for I3C2, received a Superior Civilian Service Award and other recognition during the ceremony.

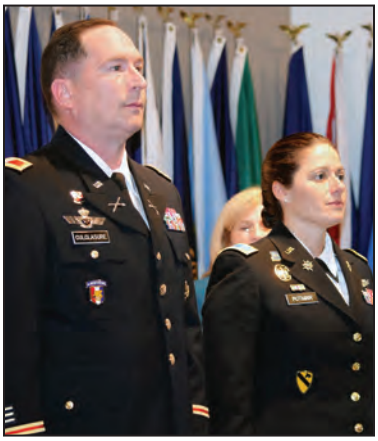
George assumed his new position after serving as the RCAS deputy product lead since December 2014. He served the Army on active duty for more than 20 years, retiring as a lieutenant colonel. He has held a variety of leadership roles, including deputy director of the Sustainment Directorate for the General Fund Enterprise Business System, deputy CIO/G-6 in the Army National Guard (ARNG) headquarters, and branch chief of information technology program management and program objective memorandum development officer for the ARNG G-6. He served one combat tour in Iraq as deputy of the Joint Acquisition Review Board and the Multinational Corps Budget Execution Office. (Photo by Sam Soleimanifar, PEO EIS)

PUTMAN STEPS DOWN AT AESIP

LTC Heather Putman, director of program operations for the Army Enterprise Systems Integration Program (AESIP), retired at a Jan. 16 ceremony at the Women in Military Service for America Memorial Hall of Honors in Arlington, Virginia. **COL Harry R. Culclasure**, AESIP Project Manager, and **Kathleen Miller**, Army assistant deputy chief of staff, G-4, chaired the event.

Putman spent more than three years with AESIP, part of the Program Executive Office for Enterprise Information Systems (PEO EIS), serving first as the AESIP technical director before moving into a leadership role as the program operations director.

"The development, integration and implementation of the enterprise resource planning systems is hard work, but these are game-changing systems for the Army's efforts to modernize and automate logistics processes," said Culclasure. "Heather quickly acclimated to the team, learning the intricacies of these very complex programs. Heather worked tirelessly on the efforts to obtain major milestone approvals for Global Combat Support System – Army and the Logistics Modernization Program, significant accomplishments that have driven and will continue to drive the programs' success." (Photo by Sam Soleimanifar, PEO EIS)



SEVERNS RETIRES FROM PEO CS&CSS

Bryan J. McVeigh, Project Manager for Force Projection in the Program Executive Office for Combat Support and Combat Service Support (PEO CS&CSS), retired **LTC Shon-Neil W. Severns** from the Army after 24 years of service. Severns most recently served as PEO CS&CSS' Product Manager for Petroleum and Water Systems. Severns' wife, Buffie, and his son Justus were on hand for the retirement ceremony. (Photo courtesy of Detroit Arsenal)

BEZWADA RETIRES AFTER 25 YEARS

Hari Bezwada, left, chief information officer (CIO) for the Program Executive Office for Enterprise Information Systems (PEO EIS), concluded his 25-year Army career at a retirement ceremony at Fort Belvoir on Jan. 28. **Victor Hernandez**, EIS program management director, presented Bezwada with a certificate of retirement.

Bezwada had served as the CIO for PEO EIS since November 2010. He is an Individual of the Year in Federal Government designee, a DOD Distinguished Civilian and an Army Distinguished Civilian Award winner, as well as a Computerworld Premier 100 IT Leader and a two-time Fed 100 winner. Bezwada was known in government information technology (IT) circles for an unwavering commitment to innovation, building relationships between unlikely partners and strong negotiating to get Soldiers the best IT solutions at the best price.

Terry Watson, acting Program Executive Officer for EIS, called Bezwada "the best CIO that the Army has to offer," and said, "The projects and initiatives Hari championed and accomplished have changed the way the Army and DOD do IT business, and significantly contributed to the excellent reputation of PEO EIS."

Bezwada was an early supporter of the Army's network modernization effort, making extensive progress in moving the Army closer to cloud computing and advocating for an increased mobile presence. As part of the mobility effort, he improved PEO EIS' Wi-Fi capabilities and moved traditional desktop applications to a mobile environment.

Taking over Bezwada's post is Manish Patel, his former deputy. (Photo by Sam Soleimanifar, PEO EIS)

GENERAL OFFICER ANNOUNCEMENTS

The Chief of Staff, Army announced the following officer assignments:

MG Edward M. Daly, deputy chief of staff, U.S. Army Materiel Command (AMC), Redstone Arsenal, Alabama, to commanding general (CG), U.S. Army Sustainment Command, Rock Island Arsenal, Illinois.

MG Clark W. LeMasters Jr., deputy chief of staff for logistics and operations, AMC, Redstone Arsenal, to CG, U.S. Army TACOM Life Cycle Management Command, Warren, Michigan.

MG Paul A. Ostrowski, deputy for acquisition and systems management, Office of the ASA(ALT), Washington, D.C., has been nominated to be deputy CG for support, Combined Security Transition Command – Afghanistan, pending approval by the chairman of the Joint Chiefs of Staff.

MG Steven A. Shapiro, assistant deputy chief of staff, G-4, U.S. Army, Washington, D.C., to deputy chief of staff for logistics and operations, AMC, Redstone Arsenal.

MG L. Neil Thurgood to deputy for acquisition and systems management, Office of the ASA(ALT), Washington, D.C. He most recently served as PEO for Missiles and Space, Redstone Arsenal.

MG Kirk F. Vollmecke, deputy PEO for Intelligence, Electronic Warfare & Sensors (IEW&S), Aberdeen Proving Ground, Maryland, to PEO IEW&S.

BG William E. Cole, deputy PEO for Missiles and Space, Redstone Arsenal, to PEO for Simulation, Training and Instrumentation, Orlando, Florida.

BG Richard B. Dix, Commander, Defense Logistics Agency – Distribution, New Cumberland, Pennsylvania, to CG, Joint Munitions and Lethality Life Cycle Management Command/Joint Munitions Command, Rock Island Arsenal.

BG Stephen E. Farmen, CG, Joint Munitions and Lethality Life Cycle Management Command/Joint Munitions Command, Rock Island Arsenal, to CG, U.S. Army Security Assistance Command, Redstone Arsenal.

BG Paul H. Pardew to director, Forward Operational Contract Support, U.S. Central Command, Camp Phoenix. Pardew previously served as deputy chief of contracting management, U.S. Army Corps of Engineers, Washington, D.C.

BG Kurt J. Ryan, Commandant, U.S. Army Ordnance School, U.S. Army Sustainment Center of Excellence, Fort Lee, Virginia, to CG, Military Surface Deployment and Distribution Command, Scott Air Force Base, Illinois.

THEN & NOW
1966 & 2016

IT AIN'T HEAVY, IT'S MY CONNECTIVITY

Back in 1966, the year before the first Super Bowl, when satellites were few and far between, the Army's long-range communication needs were taken care of using low-frequency communications. Those who've been driving at night on the East Coast and picked up an AM radio station out of Chicago or Nashville would intuitively know the reason why.

Back then, today's cellular and satellite communications devices—smartphones, iPads, Androids, GPS—would have been the stuff of science fiction. That's why the February 1966 edition of the Army Research and Development Newsmagazine (now Army AL&T magazine) extolled the wonders of a "revolutionary" new low-frequency antenna being tested at the Army Electronic Proving Ground at Fort Huachuca, Arizona.

While it looks quaint today, it was then the best the Army had for communicating over long distances. The system was mounted on a 2 1/2-ton M36-C combat truck ("the deuce and a half truck" for old-timers). According to the article, "Three hydraulic lifts move the top load—more than a ton of Litz wire coiled like a clock spring—to the 38-foot level. The lifts can be operated simultaneously or independently to enable the erecting team to equalize the antenna's plane with the earth." Litz wire consists of cables of multiple strands of insulated wire, effective at low frequencies. Adding to the load were 100 square feet of copper netting coiled on two spools, which completed the circuit—all in all, a cumbersome way to set up communications on the battlefield.

QUICK AND EASY

Fifty years and 50 Super Bowls later, the new Transportable Tactical Command Communications (T2C2) duo of lightweight, high-bandwidth, inflatable satellite dish/antennas is available. T2C2 promises to keep Soldiers and commanders connected to the Warfighter Information Network – Tactical (WIN-T) that provides high-speed, high-capacity voice, video and data communications in theater.

"T2C2 is the Army's early-entry SATCOM [satellite communications] solution, and will provide network

ENSURING BATTLEFIELD COMMS
Because the T2C2 is inflatable, it can provide a larger dish size with increased capability and bandwidth efficiency in a smaller package. (U.S. Army photo)

QUICK SETUP
Paratroopers with the 1st Brigade Combat Team, 82nd Airborne Division set up a T2C2 inflatable satellite antenna in July 2015 as part of an exercise at Fort Bragg, North Carolina. Troops can set up the T2C2 within 30 minutes of hitting the ground. (82nd Airborne Division photo)

reachback to our forces during all phases of joint operations, to ensure commanders and staffs can share critical battlefield information even in the most austere and remote environments," said MAJ Bart Brimhall, T2C2 assistant product manager for satellite communications at Project Manager WIN-T.

Within 30 minutes of hitting the ground, early-entry troops can set up the inflatable T2C2, which couples a larger dish size with increased capability and bandwidth efficiency in a small package. The 25-pound platform includes an inflatable satellite dish and parabolic reflector in the center of a sphere, which, once expanded, resembles a giant beach ball and affords twice the aperture of a rigid antenna of similar capacity. The T2C2 "Lite" version fits in just two soft-side cases that could easily be checked baggage on a commercial flight. The highly expeditionary inflatable satellite antennas promise the field commander increased operational flexibility and speedy maneuvering to reach out and touch the bad guys—not too shabby in setting up early-entry contingency communication.

Unlike 1966, in today's increasingly complex world, the Army must be able to rapidly deploy on short notice and communicate anytime, anywhere, at every stage of operations from early entry to the tactical edge at the command post and forward operating base. This requires communications equipment that is easy to transport, set up, operate and maintain—like T2C2.

For more information about T2C2, go to ***http://peoc3t.army.mil/wint/t2c2.php****. For a historical tour of Army AL&T over the last 55 years, go to the Army AL&T archives at* ***http://asc.army.mil/web/magazine/alt-magazine-archive/****.*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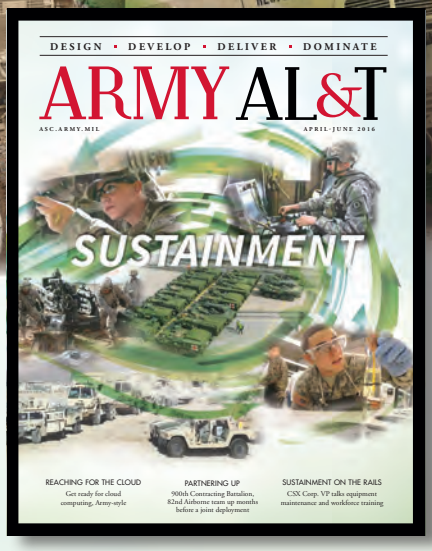
APRIL-JUNE 2016

RESOLUTE SUPPORT



ROUND PEG, SQUARE HOLE

Adapted foreign military sales for Afghan defense forces

WISH LIST

What Afghanistan needs to secure itself

From the Editor-in-Chief

@ Email Nelson McCouch III
ArmyALT@gmail.com

TALK BACK

Let us know how well we are meeting your needs. Send an email to **ArmyALT@gmail.com**.

For more news, information and articles, please go to the USAASC website at **http://asc.army.mil**. Click on the Publications tab at the top of the page.

Welcome to this Army AL&T special report on Army acquisition in Afghanistan. Being a Soldier is hard, and the jobs of deployed DA civilians who support them aren't much easier. Unlike a typical job stateside where a bad day is still going to end in the late afternoon or early evening, and "deployment" might mean going to the satellite office for a few days to help straighten out the books, an *average* day for a Soldier or DA civilian at the tip of the spear involves 24/7 operations, living in potentially hostile hot spots where you might encounter the odd improvised explosive device, a terrorist with a suicide vest or, for Soldiers, plain old combat. A bad day could be a whole lot worse, and a bad day at the office just doesn't compare to a bad day in combat.

What goes a long way to make that bad military day (mostly) survivable, if not tolerable, is sustainment, the theme of this issue.

Unlike in the other side of the magazine, where sustainment is baked into the processes, products and procedures in an environment controlled by the Army Acquisition Workforce, think of the most austere circumstances you can imagine: Afghanistan. Even with the transition of NATO support from a combat role there to a "peaceful" train, advise and assist mission, the circumstances for Soldiers and their civilian counterparts are not exactly ideal. Afghanistan, after all, is a country that has known nothing but war for several decades, has a hodgepodge of aging military equipment from all over the world, is known for a history of rampant corruption, has a fractional literacy rate, operates on a solar calendar and starts a "new" war with the beginning of each "fighting season." There's no 7-Eleven down the street, no auto repair shop, no ATM and no Walmart to pick up whatever you need. It's usually BYO everything! So, what else is there to do but work?

And work they do, because the job of the Combined Security Transition Command – Afghanistan is basically: Fix it.

There they are, deployed with few, if any, modern conveniences, spotty electricity, few roads, ungoverned territories, little fuel and merciless terrain, not to mention the Taliban and other hostile groups. And, astonishingly, incrementally, they're accomplishing the mission in a wide variety of ways, as the following articles demonstrate.

How are they doing it? See the challenges faced by our advisers in Afghanistan and how they overcome them in "Train, Advise, Assist" (Page 6). Contracting, never easy anywhere, takes on a whole new level of difficulty in Afghanistan, and our cadre of experts has built a wide array of skills necessary to make contracting work there. Learn how contracting experts become more resilient to complete the mission in "Expanding Horizon" (Page 44). Finally, one country's wish list is another's "must have." Discover how expert teams on the ground are working to acquire what the young Afghan democracy needs to grow and mature while sustaining its security and enabling the government to govern, in "A Wish List for Afghanistan" (Page 30).

Hats off to MG Gordon B. "Skip" Davis Jr., commander, Combined Security Transition Command – Afghanistan and deputy chief of staff for security assistance for Headquarters, Resolute Support, his deputy commanding general for support, MG Daniel P. Hughes, and their entire team for their tireless efforts toward achieving their mission to ***"enable Afghanistan and its security forces to sustain their efforts and guide Afghanistan into a brighter future."***

Nelson McCouch III
Editor-in-Chief

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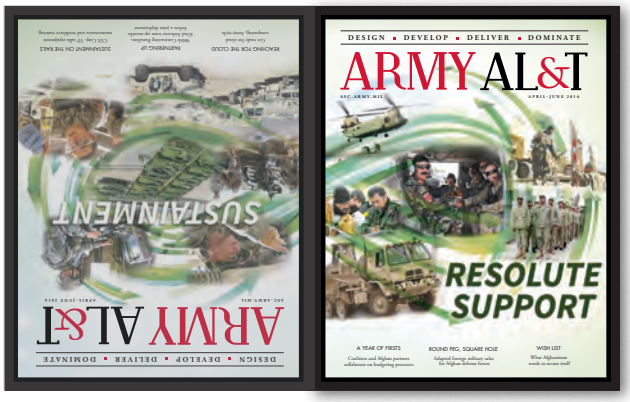
ARMY AL&T

APRIL–JUNE 2016

FEATURES

RESOLUTE SUPPORT



ON THE COVER

Before the United States can shift its world focus, the Afghan national defense and security forces must become sustainable, effective and affordable if they are to support the fledgling, still fragile government of the Islamic Republic of Afghanistan. The mission of the Combined Security Transition Command – Afghanistan (CSTC-A)—part of NATO's Resolute Support Mission—is to make that happen. Considerable strides have been made, but the very complex mission continues.

SPOTLIGHT:

MRS. AUNDAIR KINNEY

'I learn something new every day'

MRS. AUNDAIR KINNEY

COMMAND/ORGANIZATION:
Expeditionary Contracting Command – Afghanistan

TITLE:
Deputy to the principal assistant responsible for contracting

DAWIA CERTIFICATIONS:
Level III in contracting

YEARS OF SERVICE IN WORKFORCE: 4

EDUCATION:
MBA in program management and B.S.A. in operations research, Wright State University

"I work long hours—on average, seven days and 70-plus hours per week. But I get to work with motivated, energetic and really smart people who bring many years of experience and best practices from across the DOD acquisition community."

Before coming to Army acquisition, Aundair Kinney spent 10 years with the U.S. Environmental Protection Agency (EPA) and 16 years with the Air Force as a contract negotiator, contract specialist and supervisory contracting officer. The one thing she learned from that work that she uses in acquisition? "Who's right doesn't matter. What matters is the right result and pushing forward in spite of adversity or other people's perceptions to complete the mission."

And push forward she has, deploying in late 2014 to Afghanistan with the Expeditionary Contracting Command – Afghanistan (ECC-A). "I deployed for several reasons," she said. "First, I don't have experience as a former service member, so I thought the deployment would give me a glimpse into the lives of our servicemen and -women and help me become a better civilian leader. There's a saying that you can't understand what you don't know. I certainly will never know the entire sacrifice our Soldiers give, but I hope to have a better understanding of military doctrine and what their life is like during deployment. Second, my home brigade was short of personnel for deployment and needed people to support the mission. The mission is interesting, so I volunteered. Finally, deploying with the home unit is a safe environment for learning, and it made the transition easier and more comfortable."

Kinney is one of 45 civilians in her unit, which also includes personnel from the U.S. Army Contracting Command (ACC), the U.S. Army Corps of Engineers and the Defense Contract Management Agency. "Our team includes former military members, people who are starting civilian careers, [those in] midcareer and those who will soon join the retiree ranks," she said. "We are contracting specialists, procurement contracting officers, administrative contracting officers, attorneys, property administrators, quality assurance specialists, human resource specialists, construction representatives and administrative professionals. That

diversity contributes to the success of the multifaceted U.S. Central Command mission."

In addition to ensuring the availability of dining facility services, solid waste removal, airlift operations and force protection services for the warfighter, ECC-A also supports the Afghan National Army, Afghanistan's Ministry of Defense and Ministry of Interior, and the Afghan National Police, as part of Operation Freedom's Sentinel. "Our daily activities directly support the Afghan government's independent sustainment and contribute to developing and improving the area's unstable economy," Kinney said.

"I work long hours—on average, seven days and 70-plus hours per week," she noted. "But I get to work with motivated, energetic and really smart people who bring many years of experience and best practices from across the DOD acquisition community. Coming to work is fun. I learn something new every day."

What do you do, and why is it important to the Army or the warfighter?

I serve as the senior contracting civilian in the brigade, and it's important because the civilian workforce provides the continuity to the warfighter. In the past, our civilians generally had more contract experience than our military personnel. The gap in contracting experience is shrinking fast as our military personnel continue to work in the acquisition career field. My job is to ensure that the team has considered all acquisition requirements; train, advise and mentor the workforce; and protect the contracting authority of the principal assistant responsible for contracting (PARC).

What is the biggest challenge your program faces, and how do you overcome it?

The biggest challenge that we face is managing human capital because of the length of deployments. We work closely with the ACC Deployable Cadre Program, the S-1 [human resources] and managers to identify people who are interested in deploying. We look at the deployment candidate's resume and match his or her professional skill set to the specific position. It is really important that people who are interested in deploying for overseas assignments periodically update their resumes and document specific work experience, including contract values and types, programs worked and computer systems used. Resumes should also indicate whether you hold a contracting officer's warrant and the warrant threshold.

What program accomplishment are you most proud of, and why?

Currently, I am most proud of the broad spectrum of contract support and contract advice our organization provides to our customers in order to meet the mission. Our contracting officers are awarding multimillion-dollar contracts in truncated amounts of time to meet the mission. Often, our personnel are called upon to lead or work on special projects and make recommendations to solve problems that extend beyond contracting. They step up and provide top-notch advice and service. I am also extremely proud of the work environment and the support our personnel provide to one another. Our team works to make sure each person is at his or her personal best.

What one skill or ability is most important in doing your job effectively?

Flexibility. You need to search for ways to get the customer what is needed while meeting federal, departmental and agency-specific acquisition regulations. An equally important skill is the cultivation of positive professional working relationships.

In addition to knowing that your work contributes to mission success for the warfighter, what's the greatest satisfaction you have in being a part of the Army Acquisition Workforce?

My greatest satisfaction has been watching junior military personnel and civilians progress and grow in the career field. There are some very talented acquisition professionals in the military and civilian ranks, and I enjoy working with them. I hope I'm contributing to their personal and professional development so that they can continue to advance in the career field.

What advice would you give to someone who aspires to a career similar to yours?

Be a student of government acquisition and become a subject-matter expert on government contracting. A career is managed through hard work, by accepting challenging assignments and being willing to work on something different. "Different" can be as simple as working on a different type of contract—base operations, research and development, systems requirements or medical operations, for example—or it may require you to relocate to a new office, a new city or a different organization. In other words, be open to change.

If you want to advance in your career, you will have to take calculated risks, taking the job or project that no one else is interested in. Finally, stay focused on your goals and don't get so focused on what other people are doing that you miss the opportunity that is within your reach.

—MS. SUSAN L. FOLLETT

INSIGHTS FROM A FIRST-TIME CIVILIAN DEPLOYER

A deputy PARC breaks down what you should know once you've decided to go.

A highlight as a member of the Army Acquisition Workforce is the enormous variety of experiences you can have over the trajectory of your professional career. As you look for opportunities to develop your skills, consider an overseas deployment. You'll provide a tremendous service to your country and will have an opportunity to work on unique and challenging requirements. You will learn about new regulations and missions, use different databases and systems, and interact with joint commands. The experience will stretch you, shape you and make you a better Army professional.

However, overseas deployment isn't something to enter into lightly. Before you decide to deploy, there's a lot to consider. Here's my perspective, as someone who's in the middle of a deployment to Afghanistan with the Expeditionary Contracting Command—Afghanistan.

The decision to deploy should be made at least six to 12 months before you want to actually go. What are some of the things you should consider before deploying? The first is, how will my deployment affect my family? When you are thousands of miles away from home for six months or more, you don't want to worry about the well-being of your family. Take time to discuss with them the length of the deployment, the country that you are considering deploying to and the realities of how day-to-day home life activities will change for them and you while you are away. You won't be able to take care of most of your responsibilities at home; someone else in your family will have to take over, or you'll have to hire someone to handle those tasks. You may miss school activities and significant events in the lives of your children and spouse.

Next, consider the mission and whether it interests you. Will you bring a skill set to advance the mission? Would the requirements of the mission strengthen your learning and growth? Nothing is worse than spending many hours at work and days away from home when you are not enjoying the job. To make sure you and the mission are a good fit, reach out to people who are already deployed. Also, keep in mind that the government establishes where you can deploy, and there are a number of locations that are available. It's up to you to decide whether you want to go to a particular location.

My deployment was originally slated for Qatar. But after learning more about the opportunity in Afghanistan, which included a new contingency contracting administration services mission and the chance to develop additional skills, I switched my deployment after consulting with my senior leaders. You and your family are not the only ones with a big stake in your deployment. Talk to your supervisor about your interest and gain his or her support before volunteering. You're an important asset, and your supervisor will have to shift your workload to someone else while you are deployed.

Finally, make sure you understand the different avenues to deployment. Through my experience, I learned that there are several deployment programs that I wasn't previously aware of, including the U.S. Army Contracting Command's Deployable Cadre Program, the DOD Civilian Expeditionary Workforce Program. Civilians can also learn about deployment opportunities through USAJobs announcements. Research deployment requirements and entitlements, because they vary based on which program you deploy with, where you go and for how long.

READY, SET, WAIT

You've made the decision, you are ready to deploy, and you have the full support of your family and your employer. You have received word that you've been selected for a deployed position. Now what?

Well, don't expect things to happen quickly. You will need to be medically cleared at your home station and to complete online deployment training on 16 different subjects. Then, you will be given a tentative date by the human resources adviser to proceed to the CONUS Replacement Center (CRC), at Fort Bliss, Texas, and process for deployment, which is also contingent upon country clearance requirements, including having an official passport.

During processing at CRC, you will receive final medical clearance and vaccinations, along with personal protective equipment (PPE) and uniforms. You'll also complete additional on-site training in first aid, use of PPE and SHARP, the Army Sexual Harassment/Assault Response & Prevention program.

As soon as you have confirmed your deployment location and departure date, talk to someone who has recently deployed to the area where you are going. Soon after your location is designated, you should receive the name of a local sponsor. Reach out to your sponsor. He or she

A WINNING TEAM
Deployed civilians of the ECC-A at Bagram, Afghanistan, in January 2016: From left in front row, James Rowe and Christopher Griffin; middle row, Ryan Buhman, Debra Burnett, Sherie Breton, Aundair Kinney, Sandra Merritt, Faye Shepherd, Danny Hall and Linda Franklin; back row, David Johnson, Glenn Macnie, Jack Markland, Robert Glass, Jay McBride, Wesley Lowe and Daniel Hereford. (Photo by Jacqueline Chandler, ECC-A)

can tell you more about the types of clothing to pack, what to ship ahead of time, electronic devices to send (or wait to purchase) and other helpful tips. Pack light—no, really light; less is better. I received lots of "stuff," such as PPE, at CRC; also, there are limitations on the type and amount of luggage you can take. Besides, you probably will not have much room for storage once you arrive in country. I learned this the hard way and had to ship home an abundance of clothing and personal items after I arrived at CRC.

PREPARE FOR LIFE TO CHANGE

You'll also need to prepare physically, spiritually and emotionally for your deployment. The late Rev. Robert H. Schuller said, "Spectacular achievement is always preceded by unspectacular preparation." Prepare to work long hours seven days a week. Prepare to live, work and dine with your co-workers in less than ideal conditions. Prepare to share your living space with a stranger. Prepare for different climates than you may be used to: In Afghanistan, for example, there may be very cold days followed by very hot days. Most important, prepare for demanding customers with difficult missions that depend on your support to be successful.

Finally, prepare to have a rewarding and life-changing experience. I am so glad that I stepped out of my comfort zone and decided to go to Afghanistan. It has been an exciting and gratifying experience to serve overseas in a joint environment alongside the world's best military and civilian personnel. It's an opportunity that should not be entered into haphazardly, and definitely one that shouldn't be overlooked.

—MRS. AUNDAIR KINNEY

FORWARD MOMENTUM
Afghan National Army Soldiers from the 201st Corps prepare to move out following a July 2015 inspection of troops at the Regional Military Training Center at Tactical Base Gamberi, Afghanistan. Army acquisition's role in CSTC-A's noncombat train, advise and assist mission is vital to Afghanistan's ability to gradually manage more and more of its own security and defense. (U.S. Army photo by CPT Jarrod Morris, Train Advise Assist Command – East Public Affairs)

TRAIN, ADVISE, ASSIST

A noncombat mission, 'train, advise, assist' sounds like something you might do on a Saturday afternoon with a little league ball team. Yet train, advise, assist looks a lot more difficult when the 'ball team' is Afghanistan—a poor nation that's seen war for decades, is rife with corruption and under constant threat. That makes the CSTC-A mission to help pull Afghanistan into the 21st century look vastly more difficult than war, requiring persistence and persuasion more than power.

by Mr. Steve Stark

Army acquisition, logistics and technology is a far-flung enterprise. Wherever the Army goes, so does that enterprise, as witness the articles in this and every issue of Army AL&T magazine. The Combined Security Transition Command – Afghanistan (CSTC-A, typically pronounced "see-STICK-uh") and the Deputy Chief of Staff for Security Assistance (DCOS SA) are part of NATO's difficult and demanding Resolute Support Mission. Their mission is to train, advise and assist Afghan security institutions to develop capabilities in resource management, inspector general (transparency, accountability and oversight) and rule of law. Although that description may

sound bland, bordering on bureaucratic, the work that the command is doing in Afghanistan is transformative. It is historic in nature and is absolutely critical to the survival and viability of the fledgling, still-fragile government of the Islamic Republic of Afghanistan.

The CSTC-A mission is fundamentally to develop sustainable, effective and affordable Afghan national defense and security forces in support of that government.

When MG Daniel P. Hughes, CSTC-A deputy commanding general, and his team reached out to Army AL&T magazine to propose the series of articles that follows, we jumped at the opportunity to provide our readers with detailed insights into the roles and responsibilities of the Army acquisition enterprise in the Resolute Support Mission. When we began to receive the articles from Afghanistan—articles that document CSTC-A's intimate involvement in transforming the Afghan government from one that, since the overthrow of the Taliban, has been plagued by cronyism and corruption to one that is more transparent, stable and capable of maintaining its own security—we realized that the articles were of such import, such breadth and depth, that we had to make them a special section.

To be sure, the Afghan government is not yet the robust and resilient institution that will be able to fend off and subdue the antigovernment forces that would bring it down, but it is making strides. The 2015 fighting season was the first in which the Afghan national defense and security forces took the lead in controlling their nation's security, with NATO-led forces serving in the train, advise and assist role.

Only a few years ago, under the aegis of the International Security Assistance Force, the CSTC-A force numbered more than 130,000; now it is approximately one-tenth that size. The significant reduction in force and the concomitant drop in enablers, as well as the decrease in coalition close air support, created significant challenges for the Afghan forces. They have risen to that challenge, according to CSTC-A, stepping up to serve and support their nation with remarkable courage and resilience despite significant casualties—more than 10,000 killed in 2015 alone.

The international community—including the United States—has pledged its continued advisement and financial commitment to the Afghan government, whose long-term security is vital to regional and global stability. Failure in Afghanistan would mean the country once again becomes a sanctuary for terrorists determined to attack our homelands. In other words, failure in Afghanistan is not an option.

At present, CSTC-A is preparing for this summer's NATO Summit in Warsaw, Poland, where coalition partners will meet to determine the support they intend to provide Afghanistan in the near term. They will review progress on current initiatives to strengthen the country's security institutions to ensure that their investments are well-spent. Thus, fiscal discipline in the Afghan government is essential to donor confidence. With its economy still weak, donor confidence is essential to Afghanistan's ability to secure itself. This principle is at the core of everything DCOS SA/CSTC-A does.

CSTC-A is committed to working with the Afghans to identify the most cost-effective ways to improve systems and processes, while keeping the focus on Afghanistan's strong warfighting capability and national security.

There is no question that for most Americans, Afghanistan is an alien place, with traditions that run counter to many of those that Americans hold dear. Yet CSTC-A is bridging these worlds. The articles that follow, plus the online extras, provide a window to that important work.

Failure in Afghanistan would mean the country once again becomes a sanctuary for terrorists determined to attack our homelands. In other words, failure in Afghanistan is not an option.

MR. STEVE STARK is the senior editor of Army AL&T magazine. He holds an M.A. in creative writing from Hollins University and a B.A. in English from George Mason University. He has worked in a variety of positions supporting communications for the Army and Navy, and has written about defense-related topics for more than a decade. He was the founding editor of the Program Executive Office for Soldier Portfolio and edited the Army's Weapon Systems handbook for six years.

The Continuing Mission *in* AFGHANISTAN

The CSTC-A has made considerable strides to establish processes to ensure that taxpayer dollars are used responsibly and effectively to create a strong, capable ANDSF.

by MG Daniel P. Hughes

Over the past 14-plus years, United States and coalition taxpayers have invested heavily in outfitting the Afghanistan national defense and security forces (ANDSF) to defend Afghanistan against a persistent insurgent enemy. This complex and demanding mission continues with the U.S.-led coalition in a train, advise and assist (TAA) role with the Afghans leading the fight to secure their homeland. More than 10,000 brave Afghan policemen and soldiers gave their lives for this cause in 2015, and more than 20,000 were wounded. Supporting their security and defense efforts within our national interests is critical.

The Combined Security Transition Command – Afghanistan (CSTC-A), as part of the Resolute Support Mission, is the center-of-gravity organization for the security assistance process for the ANDSF and ministries of the government of the Islamic Republic of Afghanistan. CSTC-A, commanded currently by MG Gordon B. "Skip" Davis Jr., has the mission to train, advise and assist the Afghan security institutions to develop capabilities for resource management, inspector general (transparency, accountability and oversight) and rule of law, and the command provides financial resources in accordance with Afghan requirements.

In July 2015, as we looked at the future of this mission as well as the declining budget authorities, we decided that we needed to change the way that we did business in Afghanistan. We needed to establish a very detailed and robust management of the myriad kinds of materiel procured, establish a repeatable and transparent programming process, radically change the processes that identify materiel and nonmateriel requirements, adapt and simplify the sustainment of those assets and help the Afghans invigorate the procurement and contracting system that is key in making this critical support mission more affordable.

SERVING SIDE BY SIDE
PFC Jeffrey Heath, a Soldier with 1st Battalion, 187th Infantry Regiment, 3rd Brigade Combat Team, 101st Airborne Division (Air Assault) (3-101 ABN), stands guard with a Soldier from the ANDSF in March 2015 at Tactical Base Gamberi in Afghanistan. Soldiers from the 3-101 ABN served as advisers to the ANDSF under the Resolute Support Mission. (U.S. Army photo by CPT Charles Emmons, Headquarters, Resolute Support)

ESTABLISHING A MATERIEL MANAGEMENT ENTERPRISE

Between 2001 and 2015, a plethora of materiel solutions were fielded as fast as possible to meet the warfighting need, with little to no consideration given to life-cycle management. The funding provided was robust enough to get the materiel to the fight quickly, with the thought that the sustainment and detailed materiel management would follow. As the coalition draws down and the amount of coalition funding draws down accordingly, we are trying to bring a far more disciplined and modern approach to life-cycle management to make the ANDSF sustainable, effective and affordable.

To establish materiel management in everything we do in CSTC-A, we established two repeating forums: a materiel management review and a commodity review. The materiel management review ensures that we review every piece of equipment that is in country now or might be in the future. Every aspect of the life cycle is considered before we acquire any new equipment or sustain the old. The commodity review focuses on the current status of each class of supply, the current stockage, the pending orders and the future need. All of the information from the materiel management review and the commodity review is passed on to the budget process for consideration in the next budget.

ESTABLISHING CONSISTENT FINANCIAL MANAGEMENT AND BUDGETING

The CSTC-A CJ-8 director, who is our comptroller, controls the Afghanistan Security Forces Fund (ASFF) and oversees the execution of the NATO Trust Fund that donor nations provide in support of the ANDSF. ASFF can only be used for the support and sustainment of

the ANDSF, specifically in the Ministries of Defense and the Interior (MOD and MOI). It is a flexible funding capability that allows CSTC-A to ensure that the MOD and MOI can succeed in the fight. The NATO Trust Fund meets critical needs in many areas, including medical, aviation support and human capital development.

The CJ-8 also advises and assists the Afghans in programming. This programming process allowed the Afghans, for the first time, to establish a three-year budget plan, and to prioritize needs within the resources that it has from Afghan sources and donor nations. The Afghans follow a 12-month solar calendar, the first month of which begins on the vernal or spring equinox. For the current solar year, the Afghans will run this process from beginning to end, marking a large step forward for the future.

REQUIREMENTS GENERATION

The CSTC-A Concept Development Directorate (CDD) was stood up in 2015 to develop a methodology to address the process of modifying the Tashkil (table of organization and equipment) to meet the emerging needs of the Afghan Army and police.

CDD established and assisted the Afghan-led command plan review whereby the ministries recommended changes to the Tashkil to meet future warfighting needs and fiscal realities. This is the first time that the Afghans led this event.

PROCUREMENT

Establishing an efficient and transparent procurement capability in Afghanistan is a priority of Ashraf Ghani, president of the Islamic Republic of Afghanistan. After his election, Ghani established the National Procurement Authority to oversee the drafting and application (after

ADVISE AND ASSIST
COL Stephen Lutsky, center right, guides Resolute Support personnel and Afghan government officials on a tour of Camp Arena in Herat during an event to strategize Afghan airfield economic development at Train Advise Assist Commands North, South and West. The three bases are among several facilities that will transition from strategic coalition hubs to centers for commercial economic development. (U.S. military photo by LT Charity A. Edgar, CSTC-A Public Affairs)

COLLECTIVE SUPPORT
Afghan President Ashraf Ghani speaks with NATO Framework Ambassadors during an April 2015 meeting at the Presidential Palace in Kabul. Ghani established the National Procurement Authority to help bring much-needed transparency to Afghanistan's corrupt procurement system. CSTC-A's efforts are helping to build that capability. (Photo by SSG Richard D. Sherba, 8th Military Police Brigade)

In July 2015, as we looked at the future of this mission as well as the declining budget authorities, we decided that we needed to change the way that we did business in Afghanistan.

LEADING THE TRANSITION
MG Gordon B. "Skip" Davis Jr., CSTC-A commander, kicks off a January meeting of the Oversight and Coordination Body at the Presidential Palace in Kabul. The meeting gave donor nation ambassadors, CSTC-A personnel, international partners and Afghan leaders the opportunity to review progress on transparency, accountability and affordability initiatives. (U.S. military photo by LT Charity A. Edgar, CSTC-A Public Affairs)

approval by the legislature) of laws to establish such a capability. CSTC-A has a TAA role with this authority, and we sit as observers in every meeting of the National Procurement Commission as the guest of the president.

The establishment of these procurement bodies has moved the Afghan nation forward in its ability to show the Afghan people and the international community transparency in how it uses its own resources as well as those of donor nations.

SUSTAINMENT

Essential Function 5 (EF5), led by Ken Watson, leads the effort in the TAA of the Afghans in sustainment. (Currently serving on a one-year deployment as the executive director of sustainment and the EF5 lead, Watson is permanently assigned as the deputy director for strategy, capabilities, policy and logistics (J-5/J-4) at the U.S. Transportation Command.)

One of eight essential functions included in the Resolute Support Mission, EF5 efforts aim to enable effective demand-based systems to meet strategic and operational requirements in facilities management, maintenance, medical support and logistics.

Watson's team is the key life-cycle management office for every materiel item in the Afghan military, except for aviation, and has established the processes and procedures for each class of supply and each materiel end item. The efforts of the EF5 team completely changed the way business is done here, and have created combat capabilities and pockets of self-reliance in the ANDSF. There is a long way to go in sustainment and maintenance, but the core has been established.

CSTC-A continues to do much more than I have discussed here, including

DATA GATHERING
Soldiers with a Task Force Longhorn multifunctional team meet with Afghan and coalition partners in December 2015 in Afghanistan. The task force and its intelligence Soldiers collect and analyze human and signals intelligence and provide it to battlefield and theater commanders. For nearly 15 years, the United States has worked with the ANDSF to defend Afghanistan against a persistent insurgent enemy. (U.S. Army photo courtesy of 504th Battlefield Surveillance Brigade)

TAKING COMMAND
GEN John F. Campbell, then-commander of the Resolute Support Mission, passes the CSTC-A colors to MG Gordon B. "Skip" Davis Jr. on Oct. 1, 2015, during the change-of-command ceremony at Resolute Support Headquarters in Kabul. Davis succeeded MG Todd T. Semonite, whom he praised for his leadership of a "high-performing, mission-focused and values-based team."(U.S. military photo by LT Charity A. Edgar, CSTC-A Public Affairs)

continued work on countering improvised explosive devices, the establishment of rule-of-law committees, the prosecution of gross violations of human rights, standing up an entire engineering enterprise to ensure the construction and maintenance of facilities and infrastructure, and myriad other critical functions.

CONCLUSION

The very complex mission in Afghanistan continues. We have made great strides in the past months, establishing repeatable, documented and modern processes to ensure that every taxpayer dollar is used to create capability for a stronger and affordable ANDSF. The lifeblood of this work and this organization is the people who volunteer to continue this mission. We need a continued flow of dedicated military and civilian professionals who will deploy to carry on this critical work.

For more information, go to ***http://www.rs.nato.int/subordinate-commands/cstc-a/index.php.***

MG DANIEL P. HUGHES is the deputy commanding general for support at CSTC-A, Camp Resolute Support, Afghanistan. Prior to this deployment he served as the Program Executive Officer for Command, Control and Communications – Tactical. He holds an M.S. in national resource strategy from the National Defense University, an MBA from Oklahoma City University and a B.A. in political science from the University of Texas at Arlington. He is also a graduate of the Dwight D. Eisenhower School for National Security and Resource Strategy, the U.S. Army Command and General Staff College and the Field Artillery Officer Basic and Advanced Courses.

IN SEARCH OF TRANSPARENCY
CSTC-A Deputy Commanding General (DCG) MG Daniel P. Hughes, left, and senior leaders listen as David King, inspector general analyst in the DOD Office of Inspector General, discusses how CSTC-A can leverage inspections to increase transparency and accountability throughout Afghanistan, in August 2015. (U.S. military photo by TSgt Robert Sizelove, Headquarters, Resolute Support)

OPERATION: PROCUREMENT REFORM

Official corruption has been likened more than once to cancer—it's a disease that destroys systems from the inside out, betraying everyone—and Afghanistan has one of the worst reputations in the world. But a CSTC-A effort aims to help President Ghani cut out that cancer by taking an operational approach.

by COL Charles Worshim III

Establishing a legitimate procurement system for Afghanistan has been a major initiative of President Ashraf Ghani since he took office in 2014. He has taken the reins of a nation where trust in the national unity government remains low because of the volatile security environment across the country, and where the cancer of corruption runs deep within the government. Ghani's fight is not only with the Taliban, but also against the corruption in the procurement system of Afghanistan. On March 5, 2015, Minister of Interior Noorulhaq Uloomi identified corruption as a greater threat to the national security of Afghanistan than the Taliban, Daesh (otherwise known as the Islamic State group) or the Haqqani network.

Long-term procurement reform—coupled with transparency, accountability and oversight—is the only chance Afghanistan has of winning its war against corruption. Procurement reform in Afghanistan reduces the opportunities that public officials have to steer contracts to selected companies that have paid bribes to win them, instead of conducting fair and open competition. Promoting fair and open competition legitimizes the procurement system in Afghanistan and instills confidence among international donors that Afghanistan is making much-needed change.

Instituting a functioning rule-of-law system that holds public officials accountable for breaking Afghan procurement law will have the greatest impact. Accountability will serve as a forcing function for behavioral change among bad actors in the system and send a clear message to the citizens of Afghanistan that no one is above the law—not even public officials.

AN AGENT FOR CHANGE

Established in late 2014 within the Administrative Office of the President, the National Procurement Authority is the agency charged with bringing about procurement reform for all 64 ministries and procurement entities across Afghanistan. The agency's goal is to foster institutional reform to provide better goods and services for Afghanistan through an effective, efficient and transparent procurement system.

Reforming or changing a dysfunctional system is never easy, especially one viewed as having corrupt individuals in senior leadership positions. In understanding Ghani's vision for the Afghanistan procurement system and the role of the National Procurement Authority, the Combined Security Transition Command – Afghanistan (CSTC-A) established the Procurement Reform Branch in the Contracting Enabler Cell in September 2015 to train, advise and assist the authority on its efforts. One of the underlying challenges facing the National Procurement Authority is how to bring reform to a system fraught with corruption for decades, and still keep a functioning procurement system during a time of war.

In a perfect world, a radical approach might be best—just dissolve the current procurement system and start over—but that's not realistic when Afghan soldiers and policemen are losing their lives every day to bring security to their homeland. They need a functioning procurement system to provide them with the goods and services necessary to continue the fight.

Under the leadership of Dr. Beth Rairigh, deputy director of the Contracting Enabler Cell, the Procurement Reform Branch is tasked with helping the National Procurement Authority develop a plan allowing for incremental reforms at the tactical and operational levels that have significant strategic impacts on the larger Afghanistan procurement system. The uniqueness of this CSTC-A train, advise and assist effort is that the impacts reach beyond just the Afghan national defense and security forces. The reforms proposed by the National Procurement Authority ultimately affect every procurement entity within the Afghan government.

SMALL TEAM, BIG IMPACT

U.S. and Afghan personnel make up the Procurement Reform Branch. From left in this photo, taken in March at Camp Resolute Support in Kabul: Christian Finley from the Defense Contract Management Agency (DCMA) Boeing Huntington Beach, California; Ajmal Paiman; Dr. Beth Rairigh, DCMA Kelly Aircraft Integration and Maintenance Overhaul, San Antonio, Texas; Ahmad Fawad Azizi; and Chanet Stewart, DCMA Phoenix, Arizona. With the mission to help the National Procurement Authority develop a plan allowing for incremental reforms, the branch has impacts reaching beyond the Afghan national defense and security forces into every procurement entity within the Afghan government. (U.S. military photo by LT Charity A. Edgar, CSTC-A Public Affairs)

In partnership with the authority, Rairigh and her team took a page from Joint Publication (JP) 5-0, "Joint Operation Planning," and used an operational approach to map out Ghani's vision for procurement reform. For such an approach to succeed as envisioned in JP 5-0, elements of the operational environment must be synchronized. Thus the team focuses on achieving unity of effort for all procurement entities across Afghanistan by synchronizing elements within the procurement system with the

PROCESS IMPROVEMENT
Maj. Gen. Gulami Sahki, left, CSTC-A DCG MG Daniel P. Hughes and Dr. Beth Rairigh of the Ministry of Defense Requirements Approval Board meet Feb. 24. The board is an element of the Procurement Reform Branch, which CSTC-A established in September 2015 to support the National Procurement Authority. (Photo by Jenell Stith, CSTC-A Contracting Enabler Cell)

POLICE LOGISTICS
BG Wilson A. Shoffner Jr., deputy chief of staff for communications for the Resolute Support Mission, visits the Afghan National Police National Logistics Center in Wardak province to learn about the Materiel Management Center and the Ministry of Interior Support Center. The National Logistics Center in Wardak was planned, designed and built to consolidate national-level logistics facilities for greater efficiency. Similarly, CSTC-A is working on multiple fronts with the Afghan government to reduce inefficiency, increase transparency and thwart corruption in the procurement system. (U.S. Air Force photo by Capt Kevin M. Limani, CSTC-A)

goal of enduring reform. The unified team agreed that lasting procurement reform in Afghanistan would best be achieved by addressing four lines of effort: people, processes, policy and transparency. These four lines of effort would be crosscutting: Multiple actions could take place simultaneously in different functional areas to create enduring procurement reform.

UNIFIED EFFORT, IMPACT

Each line of effort offers Afghanistan a chance at real procurement reform. Addressed individually, each creates a singular approach to reform. Linked together, they create opportunities for unified actions to occur along each line of effort that focus directly on procurement reform.

When assessing the current conditions of the Afghan procurement system, the National Procurement Authority, along with CSTC-A's Procurement Reform Branch, identified multiple shortfalls that contribute to the system's inefficiency and ineffectiveness and foster a culture of corruption. Antiquated procurement law, a purely paper-based, lengthy bureaucratic process, untimely planning, lack of adequately trained professionals, lack of systemic accountability and a lack of contract management and oversight are just some of the many challenges the team must address in order to reform the corrupt and ineffective procurement system.

As the change agent for Afghan procurement, the National Procurement Authority has fully championed enduring reform and is committed to confronting the challenges. In the authority's short existence, it has made great progress in implementing systems and processes across all four lines of effort in order to get changes moving in the right direction.

The National Procurement Authority conducts regularly scheduled training

sessions and professional development courses to enhance the procurement workforce. It is also creating the Afghanistan National Procurement Institute to replace the Public Procurement Training Center, and is updating curricula to incorporate recent revisions to public procurement law and the rules of procedure for public procurement. In addition, the Procurement Reform Branch has opened discussions with the Defense Acquisition University to develop a certification program for Afghan procurement professionals, similar to the one for DOD acquisition professionals.

EARNEST MONEY
Personnel from the 205th Corps of the Afghan National Army accept bids for three solar power projects and a separate construction project in June 2015 in Kandahar. In a sign of progress toward transparency in procurement, the current contracting bid process in Afghanistan requires vendors to bring a cash deposit to the bid opening as a good-faith demonstration that the vendor has the assets to perform the required services. Previously, a vendor had to provide only a letter of credit, a process subject to corruption since vendors could simply bribe bank employees to provide fraudulent letters of credit. (Photo courtesy of 7th Infantry Division)

In modifying Afghanistan's procurement processes, the National Procurement Authority has been instrumental in streamlining them for greater efficiency, while still maintaining the appropriate level of oversight to identify and eliminate potential corruption. As one of its major duties, the authority serves as the final quality control mechanism for all procurements of goods and services over $300,000. By serving as the independent agent for Afghan procurement, the authority identifies inconsistencies with contract packages that could be associated with potential corruption and makes recommendations to Ghani's procurement commission on the award of the contract. Transparency in the procurement system provides the citizens of Afghanistan the assurance they need to begin the initial steps in trusting the government.

Changes in policy proposed by the National Procurement Authority have been instrumental in attempting to curb corruption. The changes have strengthened oversight and accountability in the procurement system throughout all of the procurement entities in Afghanistan. The updated procurement law also established the Disputes Resolution Commission, a body specifically designed to allow vendors to bring procurement irregularities and disputes forward for resolution. Before the commission's creation, vendors who had procurement complaints didn't have a viable system to pursue a lawful resolution.

The changes in policy and procurement laws are long overdue and will take time to penetrate the procurement system, but the foundation is being laid for lawful reform.

CONCLUSION

The government of the Islamic Republic of Afghanistan must realize a transparent procurement system if there is any chance of legitimacy taking hold in the country. In the absence of a transparent system, Afghanistan will always struggle to break free of its designation as one of the most corrupt countries in the world. The National Procurement Authority has taken great strides to increase the transparency of the public procurement system in Afghanistan, but more work is needed.

The operational approach developed between the National Procurement Authority and the Procurement Reform Branch offers Afghanistan the best chance at creating the long-term unity of effort that is needed to make Ghani's vision a reality for Afghanistan's procurement system. Contrary to popular belief, the national unity government is moving Afghanistan in the right direction with the governance to make the country a viable, independent nation providing security and economic prosperity for all its citizens.

For more information, go to the National Procurement Authority's Facebook page at ***https://www.facebook.com/National-Procurement-Authority-833952173357446/****.*

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BRINGING AFGHAN DEFENSE FORCES UNDER BUDGET

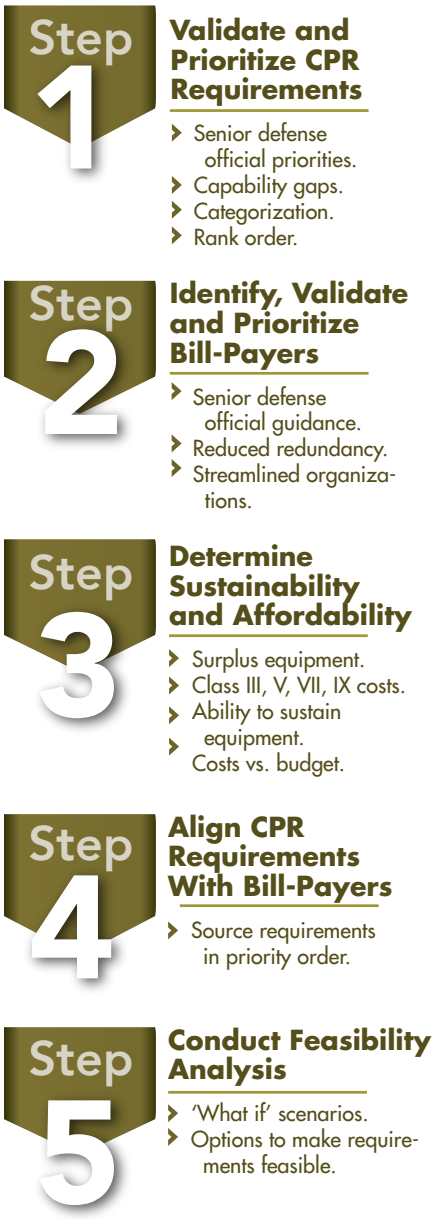
Sustainability and affordability are key to the work of CSTC-A's Capabilities Development Directorate to aid Afghan defense leaders in building the best possible army and police organizations in a resource-constrained environment.

by COL Garrett D. Heath

The mission of the Combined Security Transition Command – Afghanistan (CSTC-A) includes developing sustainable Afghan national defense and security forces (ANDSF) capacity and capabilities. CSTC-A's Capabilities Development Directorate (CDD) is the lead organization that trains, advises and assists Afghan leaders to develop and manage the Afghan National Army (ANA) and Afghan National Police force structures using the strategic guidance of coalition and Afghan senior defense officials and advisers.

CDD accomplishes this using a change process that develops documents prescribing the capabilities, organizational structure and minimum essential wartime requirements for personnel and equipment for army and police organizations to accomplish their missions. Personnel and equipment authorizations are documented using the Tashkil, a document similar to the U.S. Army's modified table of organization and equipment.

FIGURE 1



STEP BY STEP

CDD developed this five-step process, and the considerations at each step, for evaluating proposed changes to the Tashkil. After completing the first three steps, roughly 25 proposals requiring 2,700 personnel authorizations remained; all could be implemented. (SOURCE: COL Garrett D. Heath, CSTC-A CDD)

A key input to the change process is the annual Afghan-led command plan reviews (CPR), whereby Tashkil changes are recommended to close capability gaps and build a better ANA. These changes have to be balanced with sustainability and affordability while ensuring that the ANA remains within an established force cap of 195,000 soldiers.

TWO MAJOR CHALLENGES

The ANA's 2016 CPR produced more than 80 Tashkil change proposals that required more than 20,000 personnel and equipment authorizations. Two challenges arose. First, only about 8,000 personnel authorizations were available. Second, only limited funds were available for new equipment authorizations and the associated sustainment. Funding levels for the ANA in 2016 decreased more than anticipated, which made it more challenging to support emerging requirements. For the foreseeable future, the ANA must build the best possible force within a resource-constrained environment.

Given the volume of requested changes and the new fiscal environment, these challenges necessitated adapting the Tashkil change process. The ANA and CSTC-A developed and implemented a disciplined process to build the 2016 Tashkil while balancing essential capabilities with sustainability and affordability.

FIVE-STEP METHODOLOGY

CDD developed and implemented a five-step methodology to address the challenges associated with the volume of proposed Tashkil changes and the need to balance requirements with sustainability and affordability while remaining within the 195,000 force cap. Implementing the methodology required close coordination between CSTC-A directorates and Afghan National Army leaders (See Figure 1). The steps are:

Step 1: CSTC-A and Afghan Army leaders and staff conducted numerous key leader engagements and working groups to validate and prioritize the volume of CPR requirements. Afghan senior defense officials' priorities, along with capability gaps identified during the previous fighting season, guided requirement validation. Change proposals that did not support official priorities or the ability to close identified gaps were dropped from further consideration. The remaining proposals were then placed into three categories and prioritized according to the degree to which they contributed to achieving tactical, operational and strategic objectives.

For example, the withdrawal of U.S. and coalition close air support resulted in ANDSF capability gaps that were most critical to ANDSF's success. Afghan Air Force and intelligence, surveillance and reconnaissance (ISR) capabilities were identified as gaps that must be closed. So, proposals that increased capabilities for the Afghan Air Force or ISR were placed in the top category and ranked highest in priority. Proposals that ranked near the bottom did not align with senior officials' priorities or close gaps. Those were dropped, but most often they could be achieved with internal reorganization or by streamlining an organization. These proposals were most often considered "nice to have." At the conclusion of this step, 55 proposals requiring 5,800 personnel and 2,900 equipment authorizations remained.

Step 2: Identification of bill-payers proved to be the most challenging step and the one where we had the least success. (Bill-payers are trade-offs, i.e., what are you willing to give up to pay for what you want or need?) Senior leader guidance issued in preparation for the Afghan-led CPR required nomination of bill-payers for all new personnel requirements.

WORKING AS A UNIT
Afghan Soldiers train with the Wolfhound Handheld Threat Warning System, developed by the U.S. Army Communications-Electronics Research, Development and Engineering Center to provide mission support and force protection, aid in combat search and rescue, and identify and geolocate spotter positions and observation posts. CSTC-A worked with the Afghan National Army to implement a disciplined process to prioritize requirements and close capability gaps with an eye toward sustainability and affordability. (Photo by MAJ Christopher D. Gilbert, CSTC-A ISR Capabilities Integration Cell)

BUILDING CONSENSUS
Afghan Minister of Defense Mohammad Masoom Stanekzai addresses members of the Afghan Air Force and Afghan national media after the delivery of A-29 Super Tucanos at Hamid Karzai International Airport, Afghanistan, Jan. 15. CSTC-A's CDD works with Afghan leaders to develop force structures for the Afghan National Army and National Police with strategic guidance from coalition and Afghan senior defense officials. (U.S. Air Force photo by TSgt Nathan Lipscomb, U.S. Air Forces Central Command Public Affairs)

Despite the guidance, few army organizations nominated bill-payers. As a result, all personnel proposals would compete for the 8,000 authorizations of uncommitted force structure.

Step 3: CDD led a study team to determine the sustainability and affordability of 20 change proposals that required 2,900 equipment authorizations. We worked with the CSTC-A sustainment directorate and Security Assistance Office to determine the availability of surplus equipment that could be aligned with proposals. The sustainment directorate calculated costs for equipment purchases in cases where surplus equipment could not meet the need. Next, the directorate calculated initial-year and out-year costs for all equipment that could be aligned with the proposals. The cost information provided realistic estimates for equipment acquisition and sustainability. Last, the resourcing directorate compared the costs against available resourcing within the 2016 budget. The result was that only two of the 20 proposals could be resourced in 2016; the balance would have to be submitted for the next year's budget cycle.

Steps 4 and 5: The fourth and fifth steps were straightforward. There were only 25 CPR proposals requiring 2,700 personnel authorizations (bill-payers); all could be implemented. Since all the remaining personnel proposals could be resourced and there were so few affordable equipment proposals, there was no need to reduce personnel or equipment requirements to remain within the 195,000 force cap and available budget.

LESSONS LEARNED

We learned two key lessons as we went through the Tashkil change process. The first is that the process must be aligned with the budget submission cycle. The 2016 Afghan-led CPR and subsequent

MARSHALING FORCES
A member of the Afghan Air Force guides in an A-29 Super Tucano on Jan. 15 at Hamid Karzai International Airport, Afghanistan. The light air support aircraft will be added to the Afghans' inventory in the spring of 2016, and is capable of conducting close air support, aerial escort, armed overwatch and aerial interdiction. Capability gaps resulting from the withdrawal of U.S. and coalition close air support were one of the issues prioritized during the Afghan-led command plan reviews, where changes are recommended to close those gaps and build a better military. (U.S. Air Force photo by TSgt Nathan Lipscomb, U.S. Air Forces Central Command Public Affairs)

portions of the change process occurred from October to December 2015; however, inputs for the 2016 budget cycle should have been submitted in January 2015. We were attempting to address new equipment resourcing requirements after decisions had been made. To address this shortcoming for 2017 and subsequent years, we advised Afghan Army leaders to submit change proposals for additional equipment during the beginning of the budget cycle, in January.

The second lesson is that all force structure change decisions must be resource-informed, and sustainability and affordability analysis must be included in the process. This was the first time that sustainability and affordability analysis had been performed, preventing the acquisition of equipment that could not be sustained and the consumption of resources earmarked for other purposes.

CONCLUSION

For the foreseeable future, ANA and CSTC-A leaders will operate within a resource-constrained environment. A disciplined Tashkil change process that is properly aligned with the budget submission cycle is essential for there to be a chance of resourcing needed, top-priority force capabilities. Equally important is that sustainability and affordability analysis must be a component of the process in order to inform all force structure change decisions. While future CDD and CSTC-A staff and leaders may fine-tune the Tashkil change process, its alignment with the budget cycle and incorporation of sustainability and affordability analysis will endure, given the new fiscal environment.

For more information, go to ***http://www.rs.nato.int/subordinate-commands/cstc-a/index.php****.*

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A YEAR OF FIRSTS

The Resolute Support Mission has helped the government of the Islamic Republic of Afghanistan achieve many firsts, including integrated program and budget development processes for the Ministry of Defense and the Ministry of Interior.

by LTC(P) Brittian A. Walker, Mr. Michael Mason and Mr. Michael Anthony

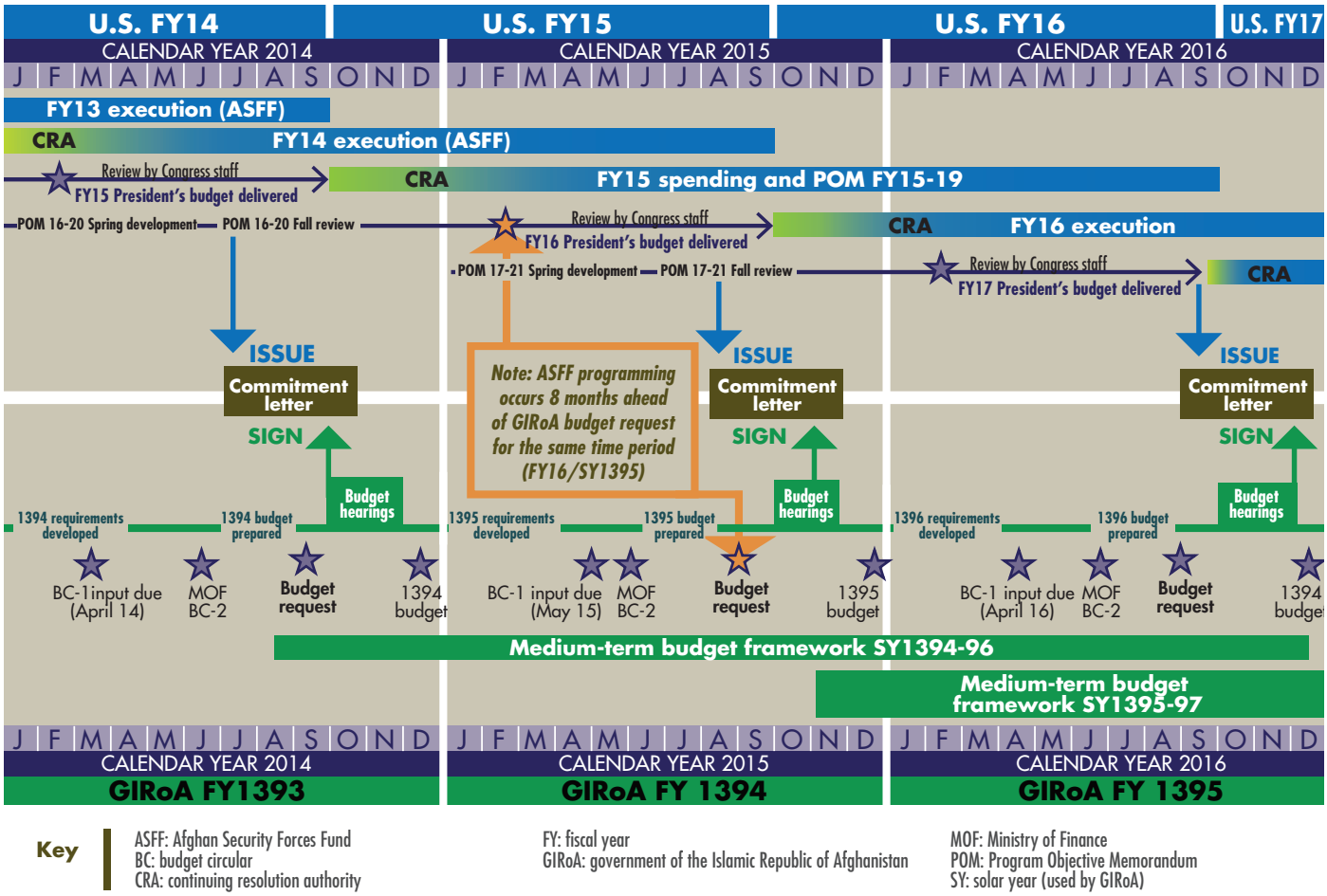
"The Resolute Support legacy to Afghanistan will not be guns and ammunition, but systems and processes that enable discipline for the future."

—President Ashraf Ghani

It is no exaggeration to say that, in summer and fall 2015, the financial processes developed and enforced for the Afghan Ministry of Defense (MOD) and Ministry of Interior (MOI), along with the budgets produced for both, ensured a secure legacy for the Resolute Support Mission, a historic achievement. For the first time, the government of the Islamic Republic of Afghanistan, the coalition and the international donor community participated in an integrated Afghan program and budget development process that not only resulted in the first integrated budget submission for both ministries, but also dramatically increased capacity to develop budgets in the future while boosting the confidence of international donors.

With the assistance of advisers from the Combined Security Transition Command – Afghanistan (CSTC-A), the Afghans created, for the first time, a prioritized list of requirements within a financially constrained environment that ultimately resulted in the submission of Afghan Budget Circular 2—the ministries' resource-constrained budget requests—to the Ministry of Finance (MOF). This product also served as the basis for the coalition commitment to Afghan national defense and security forces (ANDSF) and will be the foundation on which to build the ANDSF Program Objective Memorandum (POM) for FY17-21. This integrated process further exposed our Afghan counterparts to requirements not previously known to them—the "off-budget" requirements, which are paid for using U.S. funds and executed by the coalition.

FIGURE 1



INTEGRATING TWO CALENDARS

The government of the Islamic Republic of Afghanistan and U.S. budget development processes are executed based on the SY or FY timeline. Working together and integrating requirements led to a comprehensive understanding of all requirements by all parties, including Afghans, the coalition and the international donor community. (Graphic courtesy of the authors)

The mission of CSTC-A's CJ-8, Program and Analysis (PandA) Division is twofold. Its primary mission is to build the Resolute Support POM. The division also has a very important train, advise and assist mission. In this role, PandA trains and mentors the Program, Analysis and Evaluation (PA&E) Directorates in MOD and MOI on program development. CSTC-A uses DOD's Planning, Programming, Budgeting and Execution (PPBE) process, in which requirements generation is an aspect of programming. In the simplest terms, requirement owners across the coalition identify requirements in a bottom-up approach. Requirement owners submit requirements to the CSTC-A CJ-8 PandA Division, which then compiles, analyzes and prioritizes each requirement, by ministry and office of primary responsibility, for leadership review.

The focus is on validating each requirement, the expected funding source, whether it is on- or off-budget, and prioritization. CJ-8 PandA then compiles and briefs the general officer steering committee (GOSC) before review and approval by the CSTC-A commander. Both the MOD and MOI generate requirements in a similar manner, but the key focus this year was on generating requirements using an integrated approach. Although

the timelines for the Afghan process, which is based on the solar calendar, and the U.S. process do not line up neatly, they are mutually supporting; the body of work from one feeds the other. (See Figure 1.)

The end product of working together and integrating requirements during this cycle enabled a comprehensive understanding of all requirements by all parties: Afghans, the coalition and the international donor community. (See Figure 2, Page 26.) This shared understanding across a larger community is a significant sign of progress as CSTC-A prepares for the NATO Warsaw Summit in summer 2016.

MINISTRY OF DEFENSE

The MOD uses a bottom-up process to generate requirements, which at times is complicated by literacy difficulties and a lack of Internet connectivity. Regardless, the MOD PA&E office collects requirements from all levels of the Afghan National Army (including special operations and air forces). These requirements are based on operational need and do not yet take fiscal constraints into account.

The assistant minister of defense's Strategy and Policy, Program and Analysis Department collects and vets the requirements, after which program working groups (PWGs) comprising O-6-level subject-matter experts validate the justification and link requirements to the national strategy, if possible. Once the MOD PA&E office develops the budget circular, it passes the circular to the financial arm of the MOD for final adjustments before it is submitted to the MOF.

In 2015, or solar year 1395, the MOD produced, for the first time, a budget based on a prioritized 1-N list of all

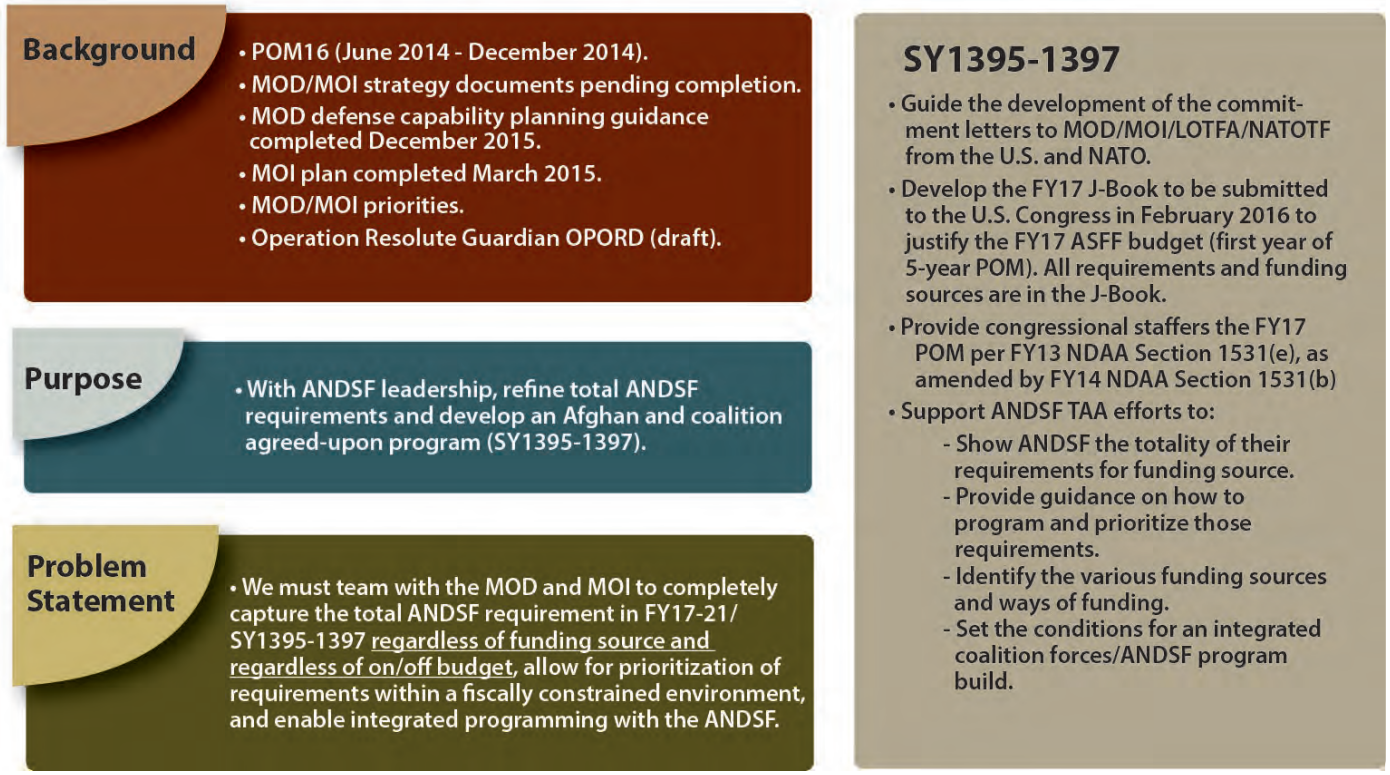
WELL-GROUNDED REQUIREMENTS

Lt. Gen. Qadim Shah, center left, chief of staff for the Afghan National Army, talks with the commander of the ANA's 111th Capital Division during a battlefield circulation for Operation Iron Triangle in August 2015. Requirements from throughout the army develop from the bottom up; the MOD's PA&E office collects them and moves them up the ministry's chain of review, after which Afghan defense officials submit them to the MOF. (Photo by Capt Susan Harrington, Resolute Support Public Affairs)

MAKING PROGRESS

MG Todd T. Semonite, third from left, then the commander of CSTC-A, meets with CJ-8 staff and staff from the MOI following an integrated GOSC meeting. CSTC-A uses DOD's PPBE process, whereby requirement owners across the coalition identify requirements in a bottom-up approach. (Photo by Wil Okraku, CSTC-A CJ-8)

FIGURE 2



Key

ANDSF: Afghan national defense and security forces
ASFF: Afghan Security Forces Fund
J-Book: Justification Book
LOTFA: Law and Order Trust Fund for Afghanistan
MOD: Ministry of Defense
MOI: Ministry of Interior
NATOTF: NATO Task Force
NDAA: National Defense Authorization Act
OPORD: operation order
POM: Program Objective Memorandum
TAA: Train, advise and assist

THE WAY FORWARD
Development of the integrated POM builds on a variety of work conducted and products generated, including capability planning guidance, MOD and MOI strategic plans and POM 16, developed in 2014. (Graphic courtesy of the authors)

program requirements for the entire Afghan National Army, constrained to a top line of funding provided by the coalition. During more than 40 PWG sessions and four integrated joint coordination councils (iJCCs), PandA successfully trained and advised the ministry. The councils brought international donors, the coalition, MOD and other Afghan representatives together for the first time to review the draft MOD budget.

Over the course of summer 2015, PandA mentored the MOD PA&E office as it developed its final programming position. This year, the final position was essentially what was submitted as the MOD's Budget Circular 2, with only small adjustments required before it was sent to the MOF. PandA mentored 12 MOD budget-builders to collaborate and develop an internally generated 1-N prioritized list of the ministry's program requirements, a significant accomplishment for the MOD. PandA also lobbied and successfully secured buy-in from MOD and coalition general officers during the inaugural iJCC and integrated GOSC forums in August 2015. The forums ultimately resulted in consensus from all parties on the MOD final programming position, leading to the MOD Budget Circular 2 submission to the MOF, the basis for the coalition commitment to the Afghan National Army and for the POM 17-21 build.

PandA's MOD counterparts also participated in the POM 17-21 build for their first look at the requirements that are funded off-budget. This exposure to the coalition program served

to familiarize the Afghans with all requirements supporting the efforts in their country, another significant first. (See Figure 3, Page 29.) The Afghans were also exposed to PandA's requirement and resourcing database, which serves as the repository for all requirements along with a justification for and the impact of each requirement. Once familiarized with all requirements, our Afghan counterparts participated in the coalition council-of-colonels and GOSC sessions, and observed the interaction of international coalition leadership justifying requirements and efforts to find efficiencies.

MINISTRY OF INTERIOR

The MOI, which is responsible for law enforcement in Afghanistan, also uses a bottom-up process to generate requirements. Provincial-level units develop requirements and, with the approval of the provincial chief of police, zone and brigade commanders, submit them to national headquarters. The headquarters collects, analyzes and prioritizes all requirements and submits them to MOI budgetary units. In conjunction with MOI's Program and Analysis Department, the headquarters also aligns requirements to strategy and prioritizes them before submitting the budget circular to the MOF.

The SY 1395 program build for the MOI included several new milestones. For the first time, MOI PA&E provided national-level training for the 1395 requirements build, including video teleconference capabilities and introducing newly developed requirements templates. Also for the first time, the MOI attempted to build its program requirements in 2015 from the provincial level up versus a Kabul-centered program. Provincial units used MOI PA&E-provided formats to develop requirements and gained approval from their respective chiefs of police before submitting everything to national headquarters.

A PROCESS TO COUNT ON
Representatives from Afghanistan's government, the Resolute Support Mission and the international donor community come together in July 2015 in Kabul during a joint budget development meeting on the MOD budget. The process dramatically increased the capacity to develop budgets in the future while boosting the confidence of international donors. (U.S. military photo by LT Charity A. Edgar, CSTC-A Public Affairs)

The headquarters collected requirements from all of its subordinate units and then analyzed and prioritized them before submitting the requirements to their respective budgetary units. The budgetary units, in turn, analyzed and determined the feasibility of requirements, in conjunction with MOI PA&E, and aligned requirements to the MOI strategy and the National Police plan.

Working groups then conducted deep dives with each budgetary unit to help validate and refine collected requirements and to provide a pathway to the iJCC, iGOSC and Budget Circular 2 submission to the MOF. Beginning in May 2015, PandA advisers mentored the MOI PA&E office and held an initial working group meeting with all budgetary units to discuss timelines and expectations of individual working groups. During the next seven weeks, PandA advisers conducted 15 internal deep-dive preparation and analysis sessions to prepare the PA&E office to conduct working group meetings with each budgetary unit. PandA also conducted nine individual PWGs with budgetary units. The goals of the PWGs included:

- Review of requirements submitted by budgetary units.
  - How did the MOI execute the program in SY 1393?
  - How is the MOI executing the program in SY 1394?
- Using the SY 1394 budget ceiling as a guide for SY 1395.
  - If requirements exceeded the SY 1394 budget ceiling, the budgetary unit needed to provide the following:

- What requirements would be above the cut line, i.e., prioritized for funding?
- What requirements would be below the cut line and not be funded?

  - Decide if a full requirement would be funded, or if reduced funding was possible for certain requirements (acceptable risk).

- Being prepared to defend, justify and prioritize their requirements from 1-N:
  - What would be the impact on the mission if a requirement weren't funded?
- Ensuring that requirements were linked to one of the four MOI programs, subprograms and activities.

These PWGs effectively prepared the MOI for the Budget Circular 2 submission, and greatly helped representatives from budgetary units to prepare for two MOI iJCCs and the final iGOSC.

AFTER-ACTION REVIEW
LTC Brittian A. Walker, chief of the Program and Analysis Division in the CSTC-A CJ-8, conducts an after-action review with MOI staff in September 2015 at the Resolute Support headquarters. Newly developed program and budget development efforts have provided Afghan leadership with experience, background and tools that they can use for the program build for SY 1396. (Photo by Michael Anthony)

For the MOI, the iJCCs were also a historic first. As with the MOD, the purpose of these meetings was to shape the ANDSF Budget Circular 2 submission before approval from the MOI and the commander of Resolute Support. Budget activity leads had the opportunity to share requirements with the international community. Participation was at the O-6 level or civilian equivalent.

As with the MOD, PandA exposed the MOI to the off-budget portion of requirements, another significant first and an enlightening experience for the Afghans. Representatives from the Canadian, Korean and Italian embassies also participated, which was yet another first, particularly as CSTC-A wanted to strengthen donor confidence in advance of the Warsaw Summit. Afghan participation included the budgetary units of the fire, prisons, gender, Afghan local police, education and training, facilities, finance, information, communications and technology, logistics, medical, public affairs and traffic departments.

The ministry's iGOSC was also a historic first, designed to review work recently accomplished during the iJCCs and to help shape the ANDSF Budget Circular 2 submission before MOI approval.

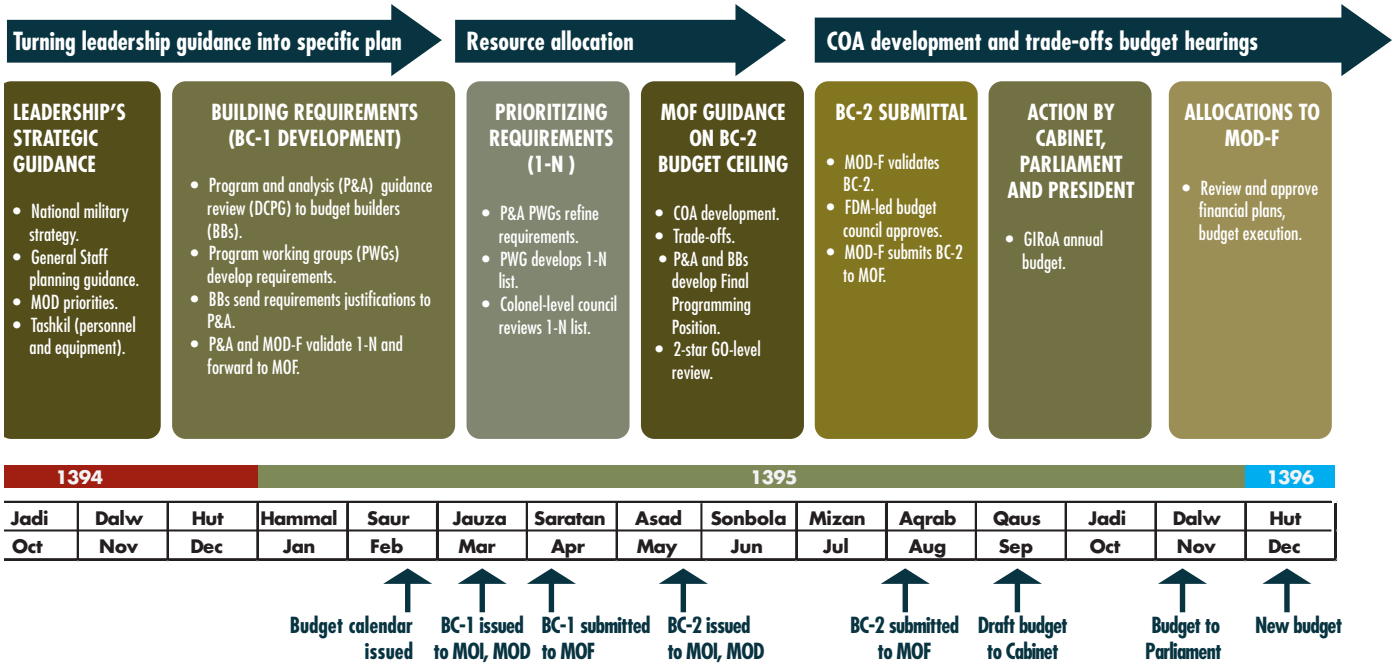
The CSTC-A commanding general co-chaired the meeting with the MOI deputy minister for security. Participation was at the O-8, major general level or civilian equivalent. The MOI program linked operational capability requirements and strategic planning guidance with resource requirements. Other attendees included the CSTC-A deputy commanding general and command sergeant major; the Afghan deputy ministers for strategy and policy, counternarcotics, support and administration; and the Essential Function 1 director for resource management. The event was a resounding success, providing our Afghan partners with invaluable insight and allowing them to ask questions and challenge one another's submissions to help shape their prioritized and constrained program into the final Budget Circular 2 submission.

Lastly, PandA invited our Afghan partners to attend and observe CSTC-A's FY17-21 POM council-of-colonels sessions and GOSCs, other milestones in the spirit of integration and transparency. These events provided an opportunity for the Afghans to be a part of a meaningful process and allowed them to observe how the coalition builds its program by identifying efficiencies and constrains requirements to a fiscal reality. The Afghans were very appreciative, and stated they had gained many useful tools that they could use when they begin their next program build for SY 1396 in the spring. A year of many firsts has significantly increased the capacity of the Program and Analysis Department at the MOI.

CONCLUSION

The successes achieved during summer and fall 2015 will ensure that the legacy of the Resolute Support Mission is secure. The financial processes that were developed and the training our Afghan counterparts received on these processes will secure a successful future for the ANDSF and have already built donor confidence in the international community. With continued work, we will ensure that the ANDSF will further develop into institutions that employ sound financial processes and serve as standard-bearers for the entire Afghan government.

FIGURE 3



Key

BC: budget circular
COA: course of action
DCPG: defense capability planning guidance
FDM: first deputy minister
GIRoA: government of the Islamic Republic of Afghanistan
GO: general officer
MOD-F: financial arm of Ministry of Defense
MOF: Ministry of Finance
MOI: Ministry of Interior
Tashkil: authorization document

STEPWISE PROGRESSION

The goals of the MOD requirements generation process are an executable budget to sustain the Afghan National Army and an unfunded requirements list for reprogramming. The requirements process begins by considering the governing strategic documents and considering what they dictate for the future. Then, those documents are translated into more specific programming guidance during this first phase. (Graphic courtesy of the authors)

For more information, go to ***http://www.nato.int/cps/en/natohq/topics_8189.htm****.*

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CAPACITY BUILDING
Afghan National Army soldiers assigned to the Military Police Guard Command fire M16 rifles during qualification training Feb. 3 at Bagram Airfield's Maholic Range. The main effort of the NATO mission in Afghanistan, and the overarching goal of the POM process, remains to train, advise and assist the Afghan security forces. (Photo by Kevin Walston, U.S. Forces – Afghanistan Public Affairs)

A Wish List for Afghanistan

Some wish lists are frivolous—the stuff of childhood dreams—but as this wish list demonstrates, some are simply must-have items, developed by teams of experts committed to the success of Afghanistan, that will enable the young democracy to grow and mature, sustain its security and enable its own government to govern.

by Maj Sabine Peters, Ph.D.

If you are like most people who are following the developments in Afghanistan these days, you might say to yourself, "This wish list has got to be a mile long," or you may ask, "Which list? There must be many." Indeed it is, and yes, there are.

However, the wish list referenced here is one recently developed as part of the Program Objective Memorandum (POM) build process—specifically, the POM for FY17-21. It is a robust list of mission-essential requirements—consolidated, prioritized and ultimately approved for submission to Congress—all in support of Afghan national defense and security forces (ANDSF) efforts to provide for the defense and security of their country. What makes this list so different from all the others is how it came to be. For the first time ever, the requirements-build process to create it was accomplished with the Afghans, to jointly capture all of the ANDSF requirements. (See related story, "A Year of Firsts," Page 23.)

As a first step, in summer 2015, MG Todd T. Semonite, then-commanding general, Combined Security Transition Command – Afghanistan (CSTC-A), issued the ANDSF Program Guidance Memorandum (APGM). In it, he directed coalition members to remain focused on developing Afghan security forces, and to position NATO Resolute

Seeds are being planted all over Afghanistan, and it will be up to the people and the country's new unity government to demonstrate to the rest of the world that Afghanistan can be counted on as an equal partner to promote and ensure regional stability.

Support Mission forces to complete their assigned mission. After 14 years of contingency operations, Afghanistan is showing some modest gains in its ability to develop its own security forces, but major challenges persist: an active insurgency and unfavorable economic conditions, to name just two. Accordingly, the coalition continues to assume relatively constant funding levels in the near term.

The main effort remains the training, advising and assisting of Afghan security institutions, while concentrating on eight "essential functions" as part of the Resolute Support Mission:

Essential Function 1: Multiyear budgeting and execution of programs
Advising efforts focus on ANDSF resource management, helping the Afghans meet their sustainment requirements, aligning budgets with programs and executing within available resources.

Essential Function 2: Transparency, accountability and oversight
Assistance in this area focuses on helping the Afghan government establish transparent and accountable fiscal stewardship, demonstrating the will to fight corruption.

Essential Function 3: Civilian governance of the Afghan security institutions
Emphasis here is on the importance of helping Afghanistan establish effective disciplinary systems in accordance with the Afghan constitution and domestic laws. A key effort is the prevention of gross violations of human rights.

Essential Function 4: Force generation
Goals include the recruitment, retention and training of qualified Afghan defense and security forces to meet manpower requirements, encouraging employment through merit-based selection to maximize potential and operational effectiveness.

Essential Function 5: Sustainment
Efforts in this area aim to enable effective demand-based systems to meet strategic and operational requirements in facilities management, maintenance, medical support and logistics. Responsiveness to end-user needs is a key component of this.

Essential Function 6: Strategy and policy, planning, resourcing and execution
The desired end state in this arena is defense and interior ministries capable of coordinating, planning and executing effective joint and combined campaigns in support of national-level security objectives.

Essential Function 7: Intelligence
Assisting Afghan forces to develop intelligence capabilities and processes; emphasizing capability integration, training and self-sufficiency is a priority here. Transitioning from paper-based to digital systems is part of this.

Essential Function 8: Strategic communication
Critical to this effort is the Afghan security and defense forces' ability to communicate effectively with the population and the international community to engender support and confidence, and to counter insurgency influences.

The goal of every entity in this POM process was to clearly articulate program requirements in support of Afghanistan's national security framework. (See Table 1.) The Ministry of Defense's national military strategy and the Ministry of Interior's strategy served as guiding documents for specific plans that addressed the development of the Afghan National Army and the Afghan National and local police. Doing so was important not only for the government of the Islamic Republic of Afghanistan, but also for the international community, since the vast majority of funds for the ANDSF still come from the United States and NATO donor nations.

Integration, transparency and discipline were guiding principles throughout the requirements development process: integration through the direct involvement of Afghan counterparts in the process, transparency through shared resourcing decisions with all parties involved, and discipline through the systematic prioritization of requirements, adjusting the program to existing fiscal realities.

TO BUILD A BUDGET

After establishing a baseline for Afghan end strength and operational readiness,

TABLE 1

Office of Primary Responsibility	Requirement Focus
DCOS ANSF LOG (logistics)	Facilitate the development of logistics distribution networks, oversee institutional logistics training and ensure enduring operational sustainment.
CEC (contracting)	Provide contract management and oversight; develop the core management and operational systems to enable the Afghans to independently plan and manage their ANDSF.
C-IED	Focus Afghanistan's actions on the defeat of IEDs as weapons of strategic influence through equipment, training, maintenance and sustainment.
CJ-6 TAA (communication)	Train, advise and assist with procurement, training, employment and sustainment of information technology and communication enablers for the ANDSF to effectively support operations across Afghanistan.
CJ ENG (engineers)	Provide high-quality facilities, improve infrastructure management systems and enhance the combat and general engineering capabilities of the ANDSF.
DCOS COMM (communication)	Implement strategic communication efforts to enhance public perceptions of legitimacy of the coalition and the government of the Islamic Republic of Afghanistan, placing operational actions in context and undermining anti-government propaganda.
DCOS INT TAA (intelligence)	Set the conditions for a professional, effective and sustainable Afghan intelligence enterprise through integration with operations, intelligence cycle development, training on and sustainment of intelligence capabilities.
DCOS INT ISR (capabilities integration)	Assist with the fielding, training, employment and sustainment of intelligence, surveillance and reconnaissance (ISR) technology to enable the Afghan National Army to effectively neutralize insurgency networks.
EF4 Human Resources Management (force generation)	Assist the ANDSF in building professional security and defense forces through recruiting, training, and the development and management of human resource systems.
EF1 (resource planning)	Assist the ANDSF to develop enduring capability to plan, program, budget and execute a resource-informed budget. Develop accountable Afghan personnel and pay processes.
GENAD (gender)	Assist the Afghan security institutions to promote women's active and meaningful participation within the organizations, including safe facilities, equal training and equipment.
CJ-MED (medical)	Assist with the development of ANDSF medical capabilities and the advancement of the Afghan civilian health system. Track supply receipt and distribution and analyze product utilization.
NSOCC-A (special operations)	Provide functionality-based security forces assistance and counterterrorism operations with Afghan special security forces to ensure a credible, capable and sustainable force. Through training programs, set the future theater posture to protect vital national interests.
SAO (Security Assistance Office)	Coordinate acquisition, transportation and end-user monitoring of foreign military sales equipment for ANDSF. Provide initial inspections, maintenance and repair of cargo.
TAAC-A Air (air force)	Train, advise and assist the Afghan National Army to develop a professional, capable and sustainable Air Force. Includes training and contracted maintenance to conduct operations.
TF PARWAN (justice center)	Train, advise and assist the Military Police Guard Command in the investigation, detention and prosecution of national security threats within the Afghan legal system.

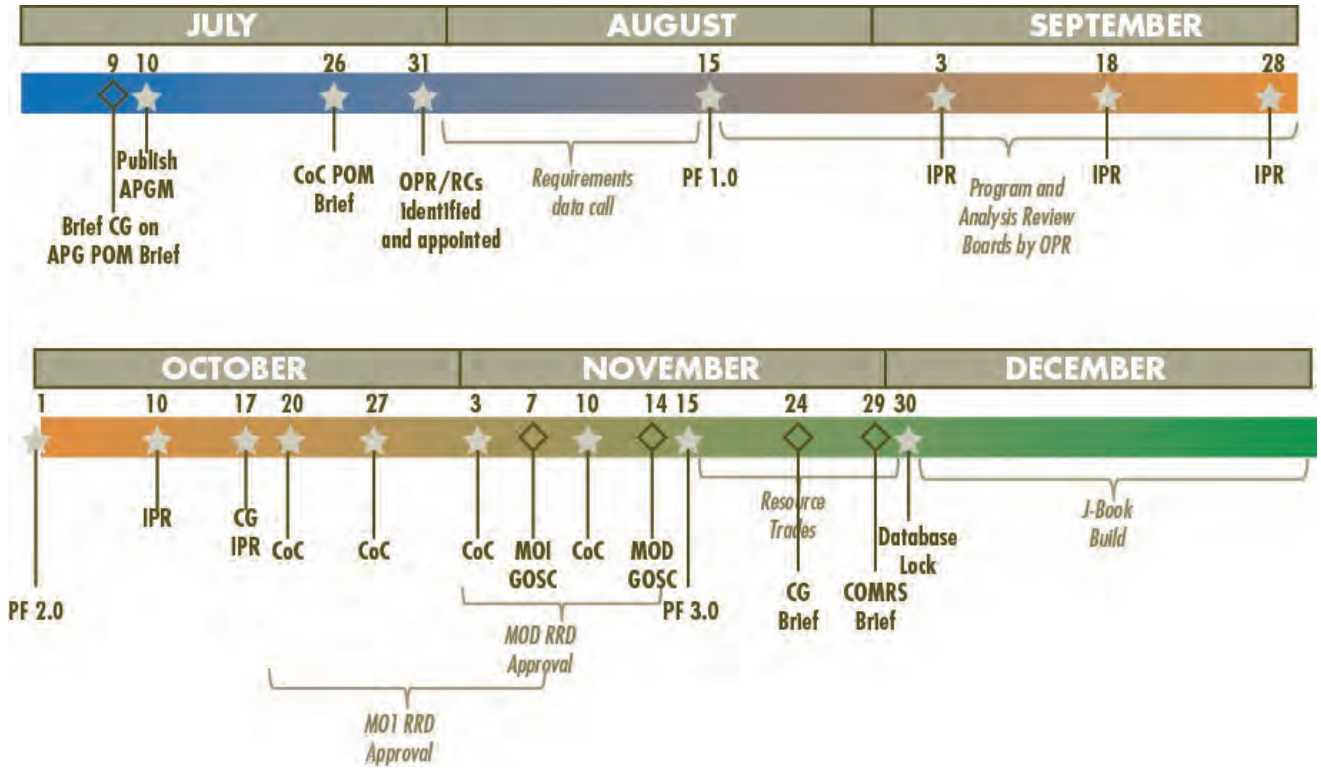
Key

ANDSF: Afghan national defense and security forces
ANSF: Afghan national security forces
CEC: Contracting Enabler Cell
C-IED: Counter-improvised explosive devices
CJ: Combined Joint
DCOS: deputy chief of staff
EF: essential function
INT: intelligence
NSOCC-A: NATO Special Operations Component Command - Afghanistan
TAA: train, advise and assist
TAAC: Train, Advise and Assist Command
TF: Task Force

KEY PLAYERS

Table 1 shows offices that submitted requirements to the POM process, and the focus of their efforts. (SOURCE: Maj Sabine Peters, Program and Analysis Division, CSTC-A CJ-8)

FIGURE 1



Key

APGM: ANDSF Program Guidance Memorandum
CG: commanding general
CoC: council of colonels
COMRS: commander, Resolute Support
GOSC: general officer steering committee
IPR: integrated program review
J-Book: Justification Book
MOD: Ministry of Defense
MOI: Ministry of Interior
OPR: office of primary responsibility
PF: POM file
POM: Program Objective Memorandum
RC: resource coordinator
RRD: requirements and resourcing document

TIME TO BUDGET
This figure shows the timeline of the key events in the recent POM budget process, which coordinated U.S., NATO and Afghan funding to sustain Afghan security forces for FY17-21. (SOURCE: Maj Sabine Peters, Program and Analysis Division, CSTC-A CJ-8)

this POM built upon the Afghans' Budget Circular 2 requirements planning phase, meaning the Afghans' submission of a prioritized list of requirements from each ministry to a fiscally constrained top line. As part of the initial requirements data call in August, requirement owners from across the coalition and their associated offices of primary responsibility (OPR) for ANDSF operational requirements were tasked with organizing their respective requirement submissions into tiers.

The idea was to systematically and objectively prioritize the coalition's submitted list of requirements (or 1-N list). First, OPRs had to decide whether a requirement was mandatory, critical or noncritical for the mission. Resolute Support strategists then assessed requirements as either Tier 1 (most important), Tier 2 or Tier 3 (least important) in terms of how well a particular requirement supported the strategic guidance spelled out in the MOI and MOD national security documents. The heads of 16 different OPRs across CSTC-A and Resolute Support verified their requirement rankings this way, in writing. Additionally, the Program and Analysis Division within CSTC-A CJ-8 (Programs and Resources Directorate) held program review boards over the summer with each of the OPRs, where they had the opportunity to justify their inputs.

Throughout this process, CJ-8 program developers instructed OPRs to ensure optimal allocations of the limited available

resources, specifically a firm Afghan Security Forces Fund (ASFF) amount, which many times meant having to find trade-offs within their portfolios. As part of the coalition's corporate POM process, consolidated requirement lists for both ministries were presented during four separate council-of-colonels sessions, two for the MOD and two for the MOI. At these sessions, OPR chiefs had the opportunity to discuss mission impacts of funding shortfalls. The programming and analysis teams of both ministries attended each of the council-of-colonels sessions. The entire program was subsequently reviewed at the general officer level during two separate general officer steering committees, one for each ministry, and again with Afghan leadership present to observe the process. (See Figure 1.)

From the beginning, coalition leadership was keen to protect critical programs such as human capital, special operations forces, gender initiatives, the Afghan Air Force and the national maintenance strategy for both ministries, as much as possible. However, having an ASFF top-line amount forced some difficult decisions even in these critical areas.

Eventually, what resulted was an executable, balanced program with more than 300 validated requirements, meeting strategic goals that best serve the needs of Afghanistan. The coalition programmed 54 percent of funding for sustainment initiatives, 35 percent for operations requirements and 11 percent for operational support.

A COLLABORATIVE PROCESS
MSgt Neal Harris and MSgt Andrea Brown, management advisers with Train Advise Assist Command – Air Force (TAAC-Air), meet with their Afghan Air Force (AAF) counterpart in September 2015 to discuss the AAF's unit manning document, or Tashkil, to help shape the future of the Afghan national defense and security forces. The Tashkil is the Afghan manpower requirements document that identifies the people and resources needed to sustain the force and complete its mission. (U.S. Air Force photo by Capt Eydie Sakura, TAAC-Air)

CREATING THE J-BOOK

Sixteen OPR review boards, four integrated program reviews, four council-of-colonel sessions, two general officer steering committees and the CSTC-A commander's approval of the POM culminated in the submission of the FY17 Overseas Contingency Operation Afghanistan Security Forces Fund J-Book to the Office of the Secretary of Defense. The J-Book provides brief descriptions of and justifications for each requirement, summarizes the results of operations in Afghanistan to date and breaks down the funding request by budget activity group (defense forces, interior forces and related activities), subactivity group (sustainment, infrastructure, equipment and transportation, and training and operations), as well as total ANDSF requirements with projected funding sources.

What makes this list so different from all the others is how it came to be. For the first time ever, the requirements-build process to create it was accomplished with the Afghans, to jointly capture all of the ANDSF requirements.

Apart from the ASFF (on- and off-budget), other funding sources for the POM include the NATO Trust Fund, the Law and Order Trust Fund for Afghanistan (LOTFA), and the government of Afghanistan itself. The Afghans are executing the ASFF on-budget requirements themselves, meaning funds are transferred to the Afghan Ministry of Finance and distributed to the MOD and MOI for execution, thereby enabling the use of Afghan purchasing procedures and contract vehicles. Many times, this means cheaper prices for end items, since most are locally procured,

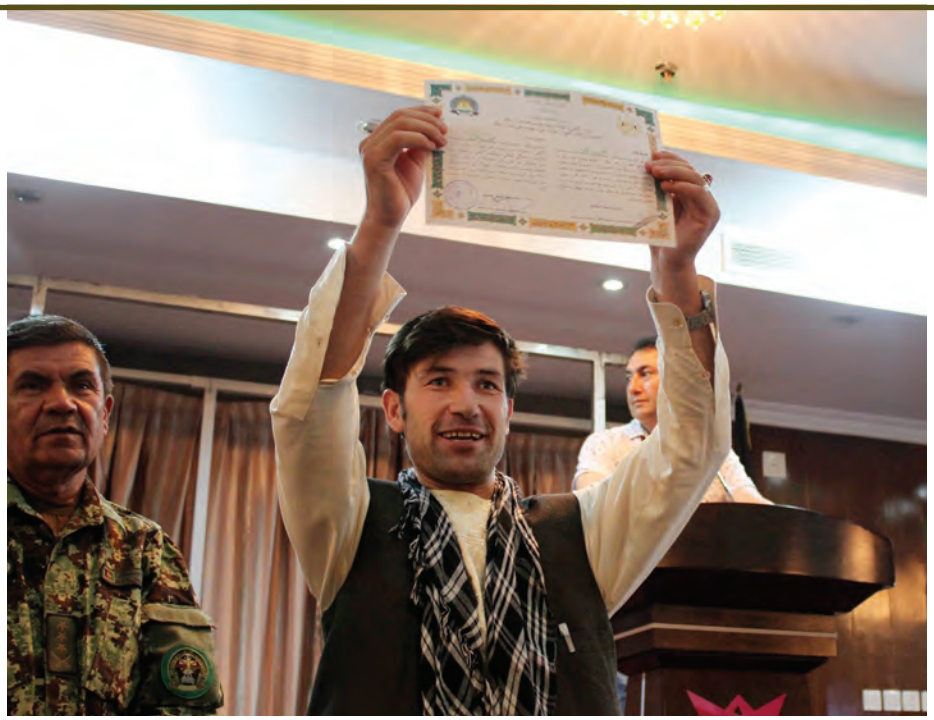
which increases the Afghans' sense of ownership in the process.

Unfortunately, Afghanistan's procurement system is still not very well developed, and contract execution rates remain low. (See related story, "Operation: Procurement Reform," Page 14.) To help the Afghans in its development, and to maximize capacity-building, funding is also allocated and executed off-budget, meaning items are purchased using U.S. systems and processes. There are particular classes of end items that are only purchased using off-budget funding because of the nature of the items and the U.S. laws that govern their sale. These include particular kinds of ammunition, weapons and other major equipment, to name a few.

The NATO Trust Fund, managed by the United States, is matching donor nation contributions with certain requirements within the Afghan National Army. Established in 2006, this fund initially provided financial resources for non-recurring costs related to transportation, installations, training and equipment for the Afghan Army. The fund has grown to include sustainment costs, as well as literacy training and professional military training for both the army and the police force. Another international donor fund for Afghanistan is LOTFA, managed by the United Nations Development Program and established to strengthen Afghanistan's ability to build and maintain a professional police force. LOTFA currently pays the salaries of the Afghan National Police and employees in the Central Prisons Department. The Afghan government is currently contributing about 8 percent of the total required budget for its own defense and security forces.

CONCLUSION

As the Afghan economy and security improve, the country's monetary



A PRIORITY WORTH PROTECTING

A child protection officer celebrates his graduation from counter-IED and mine awareness training, after a four-day seminar in July 2015 where officers and teachers from all 34 provinces learned about the newest IED technology, what to look for and how to use the 119 Emergency Services Call Center for reporting. During the POM budgeting process, coalition partners were keen to protect critical programs like this one, forcing a careful prioritization of budget requirements. (U.S. military photo by LT Charity A. Edgar, CSTC-A Public Affairs)

COORDINATED SUPPORT

Seventeen coalition partners joined Afghan government officials and CSTC-A representatives June 16, 2015, at the Ministry of Finance in Kabul. This Oversight and Coordination Body is a biannual gathering to coordinate donor commitments with Afghan national defense and security forces funds for sustainment. (U.S. military photo by LT Charity A. Edgar, CSTC-A Public Affairs)

ESSENTIAL FUNCTIONS
Donor nation ambassadors, CSTC-A personnel and international partners joined Afghan leaders, including President Ashraf Ghani, at the Presidential Palace in Kabul on Jan. 24, to review progress on transparency, accountability and affordability initiatives within the Afghan security institutions at the sixth meeting of the Oversight and Coordination Body. Encouraging transparency and the will to fight corruption is part of the second essential function of the Resolute Support Mission. (U.S. military photo by LT Charity A. Edgar, CSTC-A Public Affairs)

contributions are expected to increase. What makes this so important is the government of Afghanistan's own commitment to do so during the NATO Chicago Summit in 2012. Donor nations came together to discuss the security situation in Afghanistan, and many countries pledged their continued support for the mission.

Donor nations will convene again this summer at the NATO Warsaw Summit to assess progress and determine their level of financial support in the years to come. Many challenges remain, and the hard work continues. Seeds are being planted all over Afghanistan, and it will be up to the people and the country's new unity government to demonstrate to the rest of the world that Afghanistan can be counted on as an equal partner to promote and ensure regional stability, now and well into the future.

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PUTTING EXCESS TOWARD READINESS
U.S. Soldiers assist an Afghan soldier as he secures ramps on a truck being used to move excess defense equipment to the ANA in February 2015. The congressionally approved direct transfer initiative aims to enhance ANA capabilities and readiness. Army Field Support Battalion Afghanistan and 401st Army Field Support Brigade (AFSB) sourced and readied the equipment for transfer. (U.S. Army photo by Summer Barkley, 401st AFSB)

Reaching *for* READINESS

Establishing the near- and long-term materiel readiness of the Afghan National Army requires urgent attention to inherent challenges and a system-of-systems approach to solutions.

by Mr. Kenneth D. Watson

History teaches us that victorious armies owe much of their success to their ability to provide effective and timely sustainment to their forces. Whether it be food, uniforms, fuel, munitions or major pieces of equipment, the effective and efficient provision, maintenance and distribution of all of these requirements are absolutely essential to the success of the warfighter.

The current state of materiel readiness in the Afghan National Army (ANA) is dire with regard to vehicle fleets and weapon serviceability. With no break in fighting on the horizon, the reset of equipment in preparation for the 2016 spring-summer campaign must take place in very short order.

Yet systemic problems continue to plague ANA supply-chain and maintenance-production capabilities. A deeper analysis of the multitude of challenges that ANA faces quickly reveals that there is no single quick fix for the current situation; instead, it calls for a system-of-systems approach to correct inherent structural flaws in established support processes and systems that are preventing the ANA from reaching adequate equipment readiness.

DEFINING THE PROBLEM

Identifying the primary issues is the first essential step. Through a methodical and deliberate review of the ANA end-to-end sustainment process, the following major systemic problems become quite clear:

1. Ineffective life-cycle management: Little to no requirements validation, analysis, prioritization, accounting, demand planning, forecasting, etc.
2. Oversized, aging fleets: Vehicle fleets have reached end-of-life dates, and life-cycle replacements have not been planned, programmed and purchased with the requisite lead time.
3. Vehicle-to-maintainer ratio is out of balance: The numbers of Afghan regional maintainers and armorers at the corps level are insufficient.

Over time, these factors have resulted in a steady decline in equipment readiness rates and an erosion of ANA combat power. Arresting the decline to get back on a path to improvement requires immediate action. The following solution set of programs and process changes are necessary to develop a sustainable, affordable and feasible means to improve the operational readiness of ANA's combat power.

A SYSTEM-OF-SYSTEMS APPROACH

First is the need to firmly establish a sustainable Afghan life-cycle management program. As many people with experience in Afghanistan will attest, the concept of time—specifically projecting into the future, at least from a Westerner's perspective—can be quite difficult to relay to our Afghan partners. We routinely plan out activities into the future, at least five years at a time. Our entire Planning, Programming, Budgeting and Execution system is based on this, with

BUILDING A CULTURE

First Deputy Minister of Defense Gen. Abdul Khaliq addresses ANA logisticians on the need for life-cycle management during a two-day materiel readiness seminar in February, which Resolute Support and CSTC-A personnel supported in an advisory capacity. Ineffective life-cycle management is one of the pressing issues getting in the way of sustainable, affordable operational readiness for the ANA's combat assets. (U.S. military photo by LT Charity A. Edgar, CSTC-A Public Affairs)

HIGH-LEVEL SUPPORT

The author, center left, and MG Gordon B. "Skip" Davis Jr., CSTC-A commanding general, listen as Afghan First Deputy Minister of Defense Gen. Abdul Khaliq talks to ANA logisticians on sustainment goals in advance of the spring and summer campaigns, at a two-day materiel readiness seminar in February. (U.S. military photo by LT Charity A. Edgar, CSTC-A Public Affairs)

TOWARD THE ACTION
ANA troops move out from the 201st Corps headquarters at Tactical Base Gamberi in July 2015 in preparation for Operation Iron Triangle. The Resolute Support life-cycle management team created a fleet analysis that has become the standard for making life-cycle planning decisions for all major ANA vehicle fleets. (U.S. Army photo by CPT Jarrod Morris, Train Advise Assist Command – East Public Affairs)

overarching strategy documents reaching far beyond that. Life-cycle management of a weapon system is quite similar in this regard, in that it is foremost a planning activity on which to base prudent, informed resourcing decisions.

This can be quite challenging to overlay onto the Afghan psyche, processes and systems, which focus primarily on the immediate to near-term future. Complicating the issue even further has been the coalition's focus over the past several years on the tactical fight and on equipping the nascent ANA at all costs, from year to year, using varying sustainment strategies and philosophies as coalition personnel have changed out annually. The result has been a ragtag fleet of aging vehicles in varying states of disrepair with no coherent plan for sustaining them effectively and affordably into the future—a future with much tighter fiscal constraints than during the height of the 2009-12 surge.

While the challenges are significant, the coalition has achieved recent progress in taking a more holistic approach to the primary combat power and enabler fleets, establishing a baseline for fleet requirements and a plan to standardize models while also setting realistic recapitalization targets based upon end-of-life projections that are specific to the operational conditions of Afghanistan.

In fall 2015, the Resolute Support life-cycle management team set about the task of performing an analysis on one of the fleets with fewer vehicles to establish a framework from which to

conduct other analyses. This trailblazing initial effort leveraged the team's expertise in maintenance, acquisition, supply chain and transportation to deconstruct the fleet, and set conditions-based planning factors for how long the ANA could expect to maintain vehicles economically while achieving at least 85 percent equipment readiness.

From these analyses, the Essential Function 5 (EF5) life-cycle management team formed and presented courses of action that, for the first time, established a deliberate life-cycle management plan five years forward that identifies and codifies predictable recapitalization points in a lasting, living document. More importantly, the plan has become a tool from which to train, advise and assist the newly established ANA Logistics and Materiel Readiness Office based on the coalition's concept of "what right looks like."

This methodology is now being applied systematically to each of the major vehicle fleets and has become the standard for making life-cycle planning decisions. While not an earth-shattering achievement from the standpoint of modern defense logistics, it was a milestone achievement, changing how we think about applying life-cycle management principles within the context of a fledgling logistics planning capacity.

SIZING THE FLEET

While effective life-cycle management is a primary requirement, overall fleet sizing follows closely behind. Fleet sizes grew unconstrained as the ANA developed in size and capabilities with equipment provided by the coalition. Missing from this growth was an assessment of requisite operational needs (troop-to-task), life-cycle costs and affordability. One of the first "aha" moments from the life-cycle fleet analysis was that the fleets need to be right-sized to essential levels necessary to maintain full operational capability.

As an example, the existing ANA High-Mobility Multipurpose Wheeled Vehicle (HMMWV) fleet consists of 9,860 vehicles on hand in four major armored models and four unarmored models. The majority of the armored fleets were delivered between 2008 and 2011, with the last deliveries in 2012.

The armored HMMWV has a life cycle of 7.5 years in Afghanistan under current conditions. These vehicles, while robust, have begun to exhibit systemic and repetitive faults, which have increased the cost and frequency of repair after the vehicles reach the end of their life cycle. Without intervention, vehicles will continue a debilitating cycle of recurring fault and repair, culminating in catastrophic failure of a key component.

The current status of the HMMWV fleet life cycle is critical; 56 percent of the fleet, or 5,544 vehicles, is beyond its 7.5-year life. These vehicles must be either replaced or reset to zero miles in order to refill to current required and approved fleet capacities. Furthermore, the total cost to replace the out-of-life-cycle armored HMMWVs with new factory replacements is roughly $1.65 billion. This includes associated costs such as shipping, without the weapons, electronic countermeasures and communications systems that would be necessary.

In years past, the coalition has purchased new vehicles for life-cycle replacement as

STRATEGY SESSION
The Train Advise Assist Command – East (TAAC-E) Military Advisory Team continues the U.S. commitment to train and advise the Afghan forces, meeting with the commander of the ANA's 201st Corps Regional Logistics Support Command to finalize details for the national maintenance strategy in October 2015, in Laghman province, Afghanistan. (U.S. military photo by MAJ Asha Cooper, TAAC-E Public Affairs)

As many people with experience in Afghanistan will attest, the concept of time—specifically projecting into the future, at least from a Westerner's perspective—can be quite difficult to relay to our Afghan partners. We routinely plan out activities into the future, at least five years at a time.

the vehicles aged out. This is expensive and incurs not only vehicle cost but also high transportation cost to deliver the vehicle to theater. If the coalition continued to replace HMMWVs with the current methodology at the authorized fleet size levels, we would replace 14,903 systems at a cost of roughly $3.9 billion over the next decade. That is clearly unaffordable given future programmed resource levels.

Thus, right-sizing the primary fleets, especially noncombat power fleets such as the Light Tactical Vehicle, is necessary and must be programmed into future Tashkil authorizations. (For more on the Tashkil change process, see "Bringing Afghan Defense Forces Under Budget," Page 19.) This will be no easy task, as Afghan cultural norms dictate that more is better, regardless of readiness and affordability. Yet ANA leaders are beginning to understand that in a resource-constrained environment, higher readiness at the price of fewer systems—especially those that do not contribute directly to combat power—is a prudent and necessary trade-off that preserves warfighting capability.

Closely linked to the fleet sizing issue is the imbalanced maintainer-to-vehicle ratio as a result of systemic shortages in maintenance personnel. In many corps, maintainers are not serving as mechanics in their positions. Rather, they are consistently assigned to other duties and spend little time actually performing maintenance functions. This lowers readiness and keeps maintainers from learning and mastering their trade. By comparison, the U.S. Army standard for the appropriate ratio of wheeled vehicle mechanics to vehicle systems is 1 maintainer for 15.6 vehicles.

The current inventory of trained ANA mechanics assigned to a Tashkil position is estimated at 2,800. Of these, it is unknown how many are actually working within their established maintenance positions. Based on fleet density, the ANA requires 3,527 mechanics capable of operator- and unit-level maintenance (10/20 levels); that means the ANA would be more than 600 mechanics short if it were at full strength. As an example of an effective sustainer-to-readiness ratio, the Mobile Strike Force Vehicle fleet of 600 vehicles has more than 2,000 10/20-level ANA mechanics trained and certified by the original equipment manufacturer. This fleet's readiness rate is steady at over 85 percent. This exemplifies the benefit of getting the right ratio of maintainers to vehicles.

CONCLUSION

A number of discrete actions, inextricably linked and mutually supportive, are necessary to remove the most significant barriers to improving the current deplorable state of materiel readiness plaguing the ANA and adversely affecting combat effectiveness.

Taking all of these actions in a holistic, methodical approach will strengthen each link of the ANA supply chain, and individual members will more clearly understand the importance of their contributions to the overall system. We can no longer tolerate the status quo; we must demand process improvement at all levels. Such an approach will improve processes without breaking the system, collectively building workable Afghan solution sets to fix problems and create pride in ownership.

For more information, call Headquarters, Resolute Support, EF5 Afghan Defense and Security Forces Capabilities and Performance (ANDSF Sustainment) at DSN: 318-449-7847.

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MOVING AHEAD

Following a ceremony recognizing the completion of construction for the Afghan National Army Officer Academy, which provides training to Afghanistan's next generation of military leaders, Afghan National Army cadets and employees from State Corps Ltd., an Afghan company that helped construct the facilities, walk across campus for the official ribbon-cutting. While the goal of CSTC-A is to transition procurement actions to the Afghan government, CSTC-A partners execute a majority of the requirements to equip, train and sustain ANDSF to enhance the nation's security. (U.S. military photo by LT Charity A. Edgar, CSTC-A Public Affairs)

EXPANDING HORIZON

With the changing coalition mission in Afghanistan, contingency contracting has also changed markedly, requiring a broader array of skills and training for a wider range of responsibilities.

by Mr. Gordon Jones and MAJ Miriam Harris

At the height of the surge in 2010, with approximately 100,000 U.S. troops in Afghanistan, the Bagram Regional Contracting Center (RCC) and the Kandahar RCC had more than 50 personnel assigned at each location, with multiple smaller RCCs all over Afghanistan providing similar contingency contracting support. The RCCs were made up of seasoned contracting professionals, military and civilian, from the Army, Air Force, Navy and Marine Corps. The workload was nonstop, with as many as 300 to 400 open purchase requests at a time.

The requirements were typical of a large-scale operational effort: bottled water, HESCO barriers, T-walls, concertina wire (C-wire) and small construction projects, including setting up relocatable buildings. The efforts of these contingency contracting professionals were absolutely crucial to provide basic necessities to sustain coalition forces and to protect U.S. forces and our coalition partners from suicide bombers and rocket attacks, which were a daily occurrence in 2010.

Fast forward to 2016: The mission in Afghanistan has changed dramatically over the last five years to a train, advise and assist role in support of the Combined Security Transition Command – Afghanistan (CSTC-A) mission and the U.S. Forces – Afghanistan mission. The roles of those deployed to carry out contingency

contracting in an RCC also have changed considerably; Soldiers expecting to come to their first contingency contracting assignment to buy bottled water and C-wire will find they are required to work in a much broader role.

A JOINT ENDEAVOR

This expanded role is supported by well-trained contracting battalions ready to deploy when called upon. The 925th Contracting Battalion, stationed at Fort Drum, New York, deployed to Kabul, Afghanistan's capital, in October 2015 to take responsibility for RCC-Capital, one of three RCCs under the Expeditionary Contracting Command – Afghanistan (ECC-A). RCC-Capital's location and mission focus is the Afghan capital area, with its primary effort being support for CSTC-A.

CSTC-A is a joint service endeavor in partnership with the government of the Islamic Republic of Afghanistan (GIRoA) to provide support to the Afghan national defense and security forces (ANDSF). "CSTC-A is charged with developing ministerial capability and capacity in the areas of budget development and execution, payment of salaries, acquisition planning and procurement. CSTC-A must continue to guide and develop budgeting, acquisition planning, procurement, financial management and contract management expertise within both the GIRoA Ministry of Defense and the Ministry of Interior," said COL Charles Worshim III, director of CSTC-A's Contracting Enabler Cell in Kabul. "These key skills are essential to the independent operation of the Afghan security institutions [which include ANDSF as well as the Afghan Border Police, the Afghan Criminal Investigation Department and the Afghan Public Protection Force] and ultimate transition to an enduring Department of State-led presence in Afghanistan," he said.

GROUP EFFORT
The RCC-E team includes, clockwise, from upper left, SFC Kelly McFarlin and MAJ Adam Patten, working in the Commodity Section; SSG Jessica Skaggs and SSG Timothy McMillan, in the Services Section; and Administrative Contracting Officers Chris Griffin, Doll Burnett and Ryan Buhman. (Photos by LTC Pamela Stephens, RCC-East)

While the command's goal is to transition procurement actions to GIRoA, presently CSTC-A partners execute a large percentage of requirements to equip, train and sustain ANDSF to enhance the security of Afghanistan. One of CSTC-A's tenets is to assist Afghans in developing their own procurement system. If the Afghans cannot execute a requirement, CSTC-A pulls the requirement to the U.S. side, where the RCC executes a contract to accomplish what's needed.

Additionally, CSTC-A's charter includes training, advising and assisting Afghanistan's National Procurement Agency in refining procurement law, regulations and processes to facilitate the government's efforts in building an autonomous procurement system. "It is imperative that we succeed in developing those requisite skills and experience to enable the ministries to operate successfully within Afghanistan while independently providing for the national security needs of Afghanistan," said Worshim.

FULFILLING AFGHAN REQUIREMENTS

CSTC-A is unique in that it uses the Afghan Security Forces Fund, an appropriation authorized by Congress. As

CHECKING IN
Gilberto Ponce, right, checks basic-issue items as personnel turn in vehicles at Logistics Task Force Bagram, Afghanistan, in May 2015. Ponce, who deployed from U.S. Army Sustainment Command headquarters, where he serves as a logistics management specialist, volunteered to spend six months helping Army Field Support Battalion – Afghanistan bridge a personnel gap. With the changing coalition mission in Afghanistan, Soldiers on contingency contracting assignments find they are required to work in a much broader role than before the drawdown. (Photo by Summer Barkley, 401st Army Field Support Brigade)

Worshim said, "CSTC-A is the sole DOD organization responsible for safeguarding appropriated Afghan Security Forces Fund resources that directly support the Afghan National Army and Police." Upholding procurement integrity is paramount at a time when DOD programs are under scrutiny to protect against fraud, waste and abuse.

Three primary processes fulfill requirements in support of the ANDSF. The first method available to requirement owners is to submit a memorandum of request through the Security Assistance Office – Afghanistan to the Defense Security Cooperation Agency for a foreign military sales-type procurement process for large acquisitions such as aviation packages. The second is to use a military interdepartmental purchase request for goods, services and construction projects executed through U.S. agencies.

The third existing procurement method for requirement owners is submission of a purchase request and commitment to RCC-Capital.

RCC-Capital's support of CSTC-A is the right solution for requirement owners, as it provides a local resource for cradle-to-grave acquisition in Afghanistan. RCC-Capital stands ready to execute contracts through award to U.S.-based and local vendors for services, supplies and minor construction projects. "Providing solid business advice early in the acquisition process is the most valuable resource we provide commanders. Providing this advice requires daily interaction, and there is really nothing better than face-to-face interaction," said LTC Wyeth Anderson, commander of the 925th Contracting Battalion.

Upon arrival in theater, the battalion immediately postured itself to accept requirements and streamline the processes necessary to provide high-quality, responsive contracting support for requirement owners, transforming RCC-Capital into a customer-focused organization. "Having the right people here is the most important factor, and Expeditionary Contracting Command – Afghanistan has done a great job resourcing RCC-Capital with smart and qualified military and civilian personnel," said Anderson.

Building a rapport with customers, including CSTC-A requirement owners, is a component of RCC-Capital's model to make it the "go to" organization for finding the right contracting solution in the capital region. An emphasis on contracting practices in accordance with regulations and policy underscores the organization's reputation for being straight shooters who work with customers to develop an acquisition strategy that will meet mission requirements. "Safeguarding these resources [appropriations] will maximize the U.S.'s ability to successfully accomplish the Resolute Support Mission to build a safe, stable country that addresses the needs of its people and eliminate safe havens that breed terrorism," said Worshim.

Within the next several years, the CSTC-A team plans to transition the procurement of requirements to GIRoA for cradle-to-grave execution and management. In the interim, RCC-Capital provides the contracting solution for acquisition planning and execution within ECC-A for CSTC-A.

CELL DIVISION

Another example of the expanded role of contingency contracting is the U.S. Army Contracting Command (ACC) decision in 2012 to create a contingency contracting administration services (CCAS) cell at its headquarters with these new missions in mind. The command's CCAS cell has developed a two-week CCAS course at Rock Island Arsenal, Illinois, for 51Cs and 1102s (noncommissioned officer and civilian contracting specialists, respectively) deploying to the U.S. Central Command area of responsibility to train and guide personnel with this mission, but it will be up to the Soldiers and civilians deployed post-2015 to make it work.

READY TO RESPOND
Mark-81 bombs destined for A-29 Light Attack Craft are inventoried and loaded onto Afghan National Army trucks for delivery to ANDSF bunkers. While the battlefield environment changes frequently, ECC leadership has developed a responsive contracting structure capable of multifunctional mission execution without the need for complex staffing adjustments or realignments. (U.S. Air Force photo by Capt Kevin M. Limani, CSTC-A)

On Jan. 9, 2016, COL Daryl P. "Rick" Harger, commander of ECC-A, accepted the transfer of authority for contract administration over six legacy contracts with performance in Afghanistan from LTC Freddy L. Adams, commander of Defense Contract Management Agency (DCMA) – Afghanistan. Performance of the contract administration function over these first six legacy contracts, which include the two largest contracts being performed in Afghanistan, with a combined contract value exceeding $16 billion, will be augmented over time by more than 100 additional contracts awarded by ACC.

According to Harger, "This CCAS mission will represent a departure from the CCAS mission being currently performed in Kuwait." The Kuwait CCAS mission was formulated using a battalion manning structure, with all personnel dedicated to performing just the CCAS mission. In Afghanistan, the CCAS mission is assigned to the RCCs, with some of the personnel "dual-hatted" to execute either contract awards or contract administration as needed.

"This will allow us to utilize the synergy between the pre- and post-award functions, and to cover surges in either arena with any excess capacity from the other," said Harger. "We're one team, one fight; it's a two-way street."

Harger has affirmed that all 51C personnel should be exposed to both pre- and post-award contracting functions, as it will broaden their experience in all facets of the contracting profession and make them better contract specialists and contracting officers as they progress in their career field. This additional exposure also increases the operational readiness of the 51C members, allowing a more rapid response to a broader variety of contingency operations. "Everybody wins," Harger noted. "The 51C builds a more comprehensive resume, and the Army builds a cadre of personnel with skill sets able to respond to a wider range of operations."

CONCLUSION

Harger and his CCAS staff applauded the cooperation that the DCMA team members extended to them during the transition from DCMA – Afghanistan to ECC-A, and noted that they were tireless in sharing information, documentation, procedures and checklists to ensure a seamless transition. To support continued high performance, DCMA agreed to act as a force provider and supplement the civilian staffing with seasoned professionals to perform as administrative contracting officers (occupational specialty 1102), quality assurance specialists (occupational specialty 1910) and property administrators (occupational specialty 1103). These experienced DCMA force providers have ensured continuity during the potentially chaotic transition from one administration philosophy to another.

"In addition to the transition of authority from one agency to another, our CCAS team must also navigate the movement of our contracting officer's representatives from the now-disabled Virtual Contracting Enterprise – Contracting Officer's Representative system to the OSD [Office of the Secretary of Defense]-mandated Contracting Officer's Representative Tracking Tool, and ensure that documents and data are incorporated into the Paperless Contracting File official contract file," Harger said. "Without motivated and dedicated personnel, this successful migration would not be possible."

With the battlefield environment in a constant state of flux, Harger noted that the organizational and operational structure of the contract award and contract administration functions must allow for maximum flexibility, mobility and readiness to be successful. ECC leadership has formulated a structure that is both dynamic and capable of multifunctional mission execution without the need for complex staffing adjustments or realignments.

"We have [personnel with] the right skill sets that are cross-trained, motivated and capable to deliver quality services and supplies to the warfighter during situations and circumstances that would overcome most other units," he said. Simply put, he added, "ECC has given us the right tools to put in our tool kits." Working together, the dedicated and diverse group of military 51Cs, DA civilians and the DCMA force providers have turned the CCAS idea into reality—in Harger's words, "Done Right—On Time."

For more information, contact Mr. Gordon Jones at ***Gordon.jones@afghan.swa.army.mil****.*

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MAJ MIRIAM HARRIS is a U.S. Army reservist presently deployed as chief of the Services Division, 925th Contracting Battalion and RCC-Capital. She holds a master of public administration degree in government contracting from Troy University and a B.A. in music from the University of North Carolina at Asheville. She is Level II certified in contracting. In her civilian capacity, she is a contract specialist for the Air Force Test Center at the Arnold Engineering Development Center, Arnold Air Force Base, Tennessee.

"Budgeting, acquisition planning, procurement, financial management and contract management expertise … are essential to the independent operation of the Afghan security institutions and ultimate transition to an enduring Department of State-led presence in Afghanistan."

WALK THIS WAY

TSgt Angel Gonzalez, C-130 maintenance supply liaison at Train Advise Assist Command – Air (TAAC-Air), makes his way to an Afghan Air Force (AAF) Mi-17 helicopter at Bagram Airfield, Afghanistan, in October 2015. Gonzalez flies from Kabul to Bagram a couple of times a week to cut roughly 10 days off the shipping process for C-130 parts needed to maintain and sustain the AAF's C-130 Hercules aircraft flying in support of Afghan National Army operations across Afghanistan. (U.S. Air Force photo by Capt Eydie Sakura, TAAC-Air)

Round Peg, Square Hole

U.S. foreign military sales are an acquisition system, not a supply system, and were never designed to support urgent combat requirements—but they are being used to supply the Afghan defense forces, to the detriment of the mission there. To support partner nations in near-term combat missions, the U.S. military needs a 'combat FMS' system.

by LTC Tyler Faulk

Supplying a military force during continuous combat operations is a challenge for even the most robust logistics system. Changing needs and priorities based on battlefield decisions, losses resulting from enemy actions as well as the distances between depots and the troops in contact all make combat logistics extremely challenging. The U.S. military, arguably the most successful at logistics in history, had to contend with a 7,000-mile-long supply chain, no nearby seaport (the closest, Karachi, Pakistan, is almost 700 miles from Kabul) and fewer than a dozen compatible airfields to supply itself during its 14-year combat mission in Afghanistan.

Since the U.S. and its NATO allies completed their combat mission and transitioned to a train, advise and assist mission at the end of 2014, the U.S. military logistics apparatus is facing a new challenge. The supply chain is still 7,000 miles long, there's still no nearby seaport and the number of airfields is still very small. As if that were not enough of a challenge, there are new wrinkles: The Afghan military has a wild mix of equipment from a dozen different nations, meaning that many of the supplies and equipment required to arm and sustain that military must be purchased from a multitude of international sources. As a result, U.S. acquisition must compete with other nations looking to purchase military equipment. The final, most awkward wrinkle is that the force being supported is not even the U.S. military.

PROTECTED SHIPMENT
Crates of M240B crew-served machine guns are downloaded and stored in a secure facility until the ANDSF is ready to receive the weapons. Strict accountability standards are maintained with such sensitive equipment as it is transferred to the ANDSF. (U.S. Air Force photo by Capt Kevin M. Limani, CSTC-A)

BOMB SALE
Mk81 bombs are lined up in preparation for handoff to the Afghan Air Force so that they can be used from the A-29 Light Attack Craft. The Afghan military has a mix of equipment from different nations, complicating the sustainment process. (U.S. military photo by LT Charity A. Edgar, CSTC-A Public Affairs)

The Combined Security Transition Command – Afghanistan (CSTC-A), a U.S. two-star-level command, is tasked to ensure that the Afghan national defense and security forces (ANDSF) receive all the military materiel and training required to support their combat operations against the Taliban. The task is proving exceptionally challenging, as the tool selected to provide the support is the round peg to the challenge's square hole.

THE WRONG TOOL

The foreign military sales (FMS) system was always designed to be a diplomatic carrot, used to secure national-level partnerships with foreign governments and militaries by selling highly capable U.S. military equipment and using the resulting logistical connections to facilitate continued access and influence. FMS uses the same processes and systems that the U.S. military uses to build its own combat power, and taps the same industries and providers.

CSTC-A's reliance on the FMS system is logical given that the intent of FMS is to provide military materiel to partner nations like Afghanistan, but FMS was never conceived of as a real-time supply system. FMS is an acquisition system, not a supply system, and there are four distinct differences that separate the two. First, the FMS system is on a different timeline; second, FMS sources solutions through a deliberate contracting process; third, FMS assumes the use of a dedicated enterprise approach; and fourth, FMS assumes that the receiving nation is equally as accountable for the equipment as the U.S. government.

FMS, by design, requires support at the Ministry of Defense level, usually with the acquisition, logistics and technology (AL&T) counterpart, and, by association, presumes levels of speed and responsiveness similar to those found in the U.S. AL&T community. This means that time horizons for new equipment acquisitions are in years and decades, not three to six months into the future like the current planning cycle in Afghanistan. In organizational practice, however, FMS is being used to support the U.S. joint force commander, executing combat security force assistance with much less focus on long-term projects or the health of the ANDSF. So it needs to more closely accommodate the time horizons of an operational combat commander, by providing materiel solutions in terms of weeks and months. To achieve this, a new term and practice needs to be brought into the discussion: "combat FMS."

OLD EQUIPMENT; MULTIPLE SUPPLY CHAINS

FMS thrives on deliberate contracting processes with competition between vendors to force the best prices for the governments

MOTOR POOL
Dozens of M1151 HMMWV gun trucks are lined up at the FMS waypoint yard, ready to be title-transferred to the ANDSF. Having transitioned from combat to a train, advise and assist mission, the U.S. military still faces a number of logistical challenges: a long supply chain, a distant seaport and a limited number of airfields. (U.S. Air Force photo by Capt Kevin M. Limani, CSTC-A)

involved while at the same time ensuring that the absolute best product is selected to fill the requirement.

In Afghanistan, however, rather than what's most appropriate to the need, sourcing for ANDSF requirements is driven by time (as above), U.S. export controls, the priorities of competing FMS customers and what may be readily available in U.S. or even third-party stocks. These solutions produce a disjointed mix of older U.S. equipment that may be nearing end of production or service life, former Soviet equipment as the default "developing military" option, or even the random donations of allied nations either inside or outside the coalition.

The resulting mashup of gear and equipment has left the ANDSF with more supply chains than they can effectively draw from, training requirements that they cannot accomplish on vehicles and weapons, and a fleet of gear available only for a year or two before it wears down and cycles out of service.

The first two factors weigh against a deliberate, interoperable approach that security forces can reasonably sustain, in favor of what's ready on hand. Short deployment rotations for U.S. advisers weigh against life-cycle management in favor of the short-term threat posed by the next seasonal campaign (an FMS-specific case of the broader "one-year war, 15 times" cliché). Additionally, the FMS system presumes a functioning ministerial-level defense staff that can assess these kinds of enterprise issues, as well as a "total package approach," meaning that each equipment acquisition comes with a training and sustainment package to ensure that it is fielded as a system, not just a piece of equipment.

With U.S. staff rotating in and out frequently and with the partner nation having an inexperienced acquisition staff, there is nobody to defend the long view and steer toward enduring, legacy defense. Rather than experienced defense acquisition professionals making decisions, they are, at best, made by well-meaning but underinformed partner nation staff or personnel who rotate on a six- to 12-month schedule, who may be supremely talented but lack the experience to judge what needs to go into a "total package approach." This lack of an enterprise approach continues to hamper the U.S. effort and limits ANDSF effectiveness.

The accountability for the equipment transferred from the U.S. military to foreign partners is an important part of the process, as the many regulations and conditions embedded in the system make clear. It's important to understand, however, that the U.S. government is not attempting to enforce accountability at the lowest levels and somehow make soldiers or police in these other countries personally financially liable for each piece of gear or equipment that they are issued.

The fundamental basis for the insistence on accountability is that the U.S. government wants to ensure that the technology involved in creating this equipment is protected and that it will not make its way into the hands of rival militaries or hostile terrorist organizations. Not everything transferred via the FMS system is high technology, vulnerable to reverse engineering and theft by rivals or adversaries. For example, there is nothing secret about an M16 rifle.

Since it is a weapon, it has to be monitored carefully and tracked by the Afghan government to ensure that it is accounted for. In the case of night vision devices, however, there is a concern about the technology being exploited, and therefore the controls placed by the FMS system are more stringent. This system of emplacing controls on a receiver nation and then verifying compliance is called end-use monitoring (EUM). Because of the inherent danger in traveling the country, EUM efforts in Afghanistan have been severely hampered in recent years, forcing CSTC-A to alter its perceptions of how extensive EUM must be as

READY TO ROAR
Hundreds of motorcycles at the Afghan Union, Transportation and Logistics Yard awaiting transfer to the ANDSF. FMS uses the same processes and systems that the U.S. military uses to build its own combat power, and taps the same industries and providers, but FMS is inherently an acquisition program, not a supply program. (U.S. Air Force photo by Capt Kevin M. Limani, CSTC-A)

well as how harsh penalties must be when compliance measures are not met.

The ANDSF thus far have done only a fair job of meeting their requirements, and as additional, potentially more sensitive systems are discussed for their use, CSTC-A is constantly working to reassess the process.

PREPOSITIONED FMS

Knowing what the challenges are with FMS in Afghanistan, what can be done about them?

The proposal from the Security Assistance Office – Afghanistan, the executor of the FMS process in Afghanistan, is to develop a "combat FMS" system that would operate like a combination of the Army prepositioned stocks (APS) system and an indefinite delivery, indefinite quantity (IDIQ) contract.

In the APS model, the U.S. FMS enterprise would conduct a study to identify the 10 most frequently purchased items using the FMS process. From there, an account would be established using the FMS trust fund (the "holding" account where paying customers' funds are held until disbursement to the contracted companies for execution of the FMS orders) with money from customers who wish to be part of the endeavor. This account would then be used to purchase large orders of the 10 identified items, which would be stored in a centrally managed facility in the United States.

Each time one of the member countries requests a new allocation of one of the commodities, prepositioned off-the-shelf stocks could be used to fulfill the request expeditiously. With each withdrawal, a new order against the IDIQ contract would be made to begin restocking the supply. This would give countries currently involved in active conflicts, like Afghanistan, the ability to resupply rapidly without the typical, multiyear waiting period.

CONCLUSION

Challenges would certainly follow: Who should manage the yard? U.S. Forces Command? U.S. Army Materiel Command? The Defense Security Cooperation Agency? Some other entity? How would conflicts between requirements or between combatant commands be adjudicated? Who decides if Iraq gets the next shipment of M240B machine guns or if they go to, say, Thailand instead? These are valid concerns, and it would seem that the Office of the Secretary of Defense designee for security cooperation may be an obvious choice to bear the bulk of the responsibilities. Many of those details would clearly have to be explored in order to finalize such an effort.

The bottom line is that the current FMS structure is insufficient for providing resources to allied nations that are actively involved in hostilities. If the U.S. government does not find a solution that provides responsive logistics resupply to our partners, we risk their success.

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